



TIMBER MARKETING and LAND OWNERSHIP in MENDOCINO COUNTY

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Mendocino County

is rich in commercial forests—1,305,000 acres, or 58 per cent of its total land area;

has an unusually high proportion of privately owned holdings—81 per cent of the commercial forest area, twice as much as for the rest of the state;

has a high proportion of small holdings—57 per cent of the private commercial forest area of the county, one-fifth of all of California's forest properties under 5,000 acres.

The great postwar boom in timber

increased annual lumber production in the county more than sixfold within 10 years;

boosted the county as an important lumber supplier—the 1956 cut of 874 million board feet was 2.3 per cent of the national lumber output;

expanded the importance of the forest industries in the local economy;

brought into existence many new mills and logging operations;

developed new markets for Douglas-fir and for old-growth redwood stands once inaccessible because of high logging costs;

increased the need for efficient timber marketing—with much of the county's forests under control separate from that of the utilization plants, operators had to buy needed timber from the land owners;

made the small forest owner—who had little experience or interest in timber marketing and whose primary interest commonly lay elsewhere—a major source of timber supply.

At first

everyone seemed to prosper.

small-forest owners had “windfalls” selling timber once thought worthless.

new mill and timber operators found an available supply of timber on these small ownerships.

But then

major imperfections in timber marketing became apparent, detrimental to sellers, buyers, and the county as a whole.

faulty marketing practices led to dissatisfaction with timber selling, timber-property damage, withdrawal of holdings from the market, and underestimation of the possibilities of planned forest management on small woodlands.

The postwar timber market in Mendocino County has been a transition market which cannot persist over a long period. To guide this transition into a sound, permanent forest economy, to avoid resource depletion which would lead to a contraction of the county's forest industries, this study offers basic information and evaluates the effectiveness of present marketing procedures. It points out weaknesses and offers suggestions as to how to overcome them.

The study is aimed at developing more efficient timber marketing in the county, and at bringing about a better understanding of timber marketing in an area of rapidly expanding cut. This is done by an analysis of information drawn from a sample of small-forest owners. The study also covers the current land-ownership situation, as several aspects of marketing are related to the nature and stability of timber holdings.

You will find the summary and evaluation of the findings on pages 4 to 8.

Owners of small timber properties and loggers and millmen who obtain stumpage and logs from such properties will find details of marketing practices on pages 26 to 44.

All those interested in the relationship of marketing and land ownership to economic development and forest policies, particularly as they concern small forest properties, will find in this bulletin basic data about the forest industries in the county, the pattern of land ownership, changes in this pattern over a ten-year period, and a description of the marketing system for standing timber from the small forest holdings.

CONTENTS

| | | | |
|---|----|--|----|
| The Findings | 4 | Timber marketing | 26 |
| The Forest Economy of | | Research method | 27 |
| Mendocino County | 9 | Sales characteristics | 27 |
| Resource base | 9 | Marketing practices | 30 |
| Forest industries | 11 | Variations in sales practices | 38 |
| Lumber and land | 13 | Prices and price-determining factors.. | 41 |
| Forestry and markets | 16 | Why woodland owners won't sell | 42 |
| The Changing Status of Land Ownership.. | 17 | Home use of woodland products | 43 |
| Basis of the study | 17 | Purchasing procedures of | |
| Land ownership in 1957 | 18 | timber buyers | 43 |
| Change in land ownership, | | Appendix | 45 |
| 1948-1957 | 21 | Literature Cited | 56 |
| Woodland Marketing Practices | 26 | | |

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TIMBER MARKETING AND LAND IN MENDOCINO

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THE FINDINGS

PRESENT TIMBER-MARKETING practices and institutions for small woodlands in Mendocino County are poorly developed and disorganized. Although large amounts of timber have been marketed, this situation is unfavorable to the productive use of the forest-land resources of the county and the development of adequate timber for the long-range future of its wood-using industries.

The great postwar surge in lumber production brought an unanticipated demand for the timber on small holdings. Newly developed and often temporary mills and logging operations created a wave of timber buyers who purchased from the small-property owners. These owners knew little about their timber holdings, seldom had experience in timber sales, and played a passive role in the marketing process.

Sales transactions in the county are developed separately and on highly individualized and variable bases. The marketing process does not include stages with a high enough degree of concentration to bring the forces of supply and demand into focus; there exist no centers of information where buyers or sellers can learn about timber availability or mill requirements. There is not even a clearly defined and uniformly applied unit for the measurement of the physical quantity of the timber bought or sold.

The traditional estimating and scaling

practices of the lumber industry may be adequate for transactions between experienced traders but in the postwar situation in Mendocino County they contributed directly to the difficulties in woodland markets.

The main weakness in marketing practices lies in the sellers' ready acceptance of a passive role and their lack of realization of the complex nature of timber sales. These sales involve cutting rights to standing timber, since timber size and other considerations usually tend to preclude logging directly by the owners unless they are specialized timber operators. Standing timber is not a standardized good separate from the property to be sold at the side of the road or in an organized market place. Instead, each property has its distinctive features affecting values and marketing possibilities, while the fixed nature of forest stands requires that the purchasers have the right to enter the sellers' lands to cut and remove the trees, which directly affects the residual values. A successful sale requires an informed and active seller who can provide for the detailed administration and supervision of all procedures related to the sale. In short, a portion of the returns from the sale must be invested in sale preparation and sale supervision.

For small-woodland owners who are not actively aware of the possibilities and problems of selling timber, no prescription of particular steps for improving

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WNERSHIP OUNTY

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sales procedures can be meaningful. The details of these procedures are discussed fully on pages 26 to 44. Frequently the problems lie more in the application of the procedures than in the procedures themselves. Written contracts have given sellers little protection when prepared without adequate recognition of legal and forestry problems at issue and when used without the support of careful supervision and active enforcement. Either the lump-sum basis or the scaled-volume basis of sale can be effective if the sale is carefully prepared and administered, and either is subject to gross abuse without such preparation and administration. Much the same is true for many of the other steps in the sales process.

Accurate and meaningful price reporting for standing timber does not appear to be feasible under the conditions prevailing in the county. The detailed and time-consuming field interviews of this study plus an analysis of recorded timber-sale contracts did not produce data adequate for the appraisal of price levels for individual properties or for the isolation of the effects of price determining factors. A fundamental difficulty in price reporting is the lack of precise and fully defined information as to the price received by the sellers. One-third of the standing-timber sales were on a lump-sum basis, which automatically makes the significance of any data on price per thousand highly questionable. In the two-thirds of the sales on a

scaled-volume basis, variations in scaling practice — often unreported and frequently unknown — substantially reduce the reliability of price data. In a number of cases the sale was based not only on cash payment for the timber but also on supplemental services such as road building, the value of which cannot be readily determined. The timber itself ranges from residual old-growth redwood trees to second-growth Douglas-fir stands, and varies widely in costs of logging and log quality. To these differences must be added wide variation in terms of sale such as length of cutting rights, liability for taxes or fire, time of payment, responsibility for slash removal, and similar matters, all of which must be defined to give precise meaning to quoted prices.

The quoted price for standing timber, therefore, is not as clear an indicator of the success of a sale as is true in many other areas of economic activity. Price is only one of several factors determining the actual return to the seller. Accurate determination of the volume cut also has a great effect on the gross cash income from the sale, while the condition of the residual stand and damage to roads, fences, and other improvements may often be the dominant factor in determining the net benefits received. The sellers' complaints usually centered on cutting and logging practices, slash disposal, scaling practices, and failure to provide services rather than on price.

Far-reaching consequences. These weaknesses in the marketing practices extend beyond the question of returns to the small woodland owners. They directly affect the commercial-timber supply of the entire county and the long-range prospects for its forest-products industries. Small timber holdings (ownerships of less than 5,000 acres) are widespread in the county, comprising 57 per cent of its private commercial forest land. Of the 126 such small-woodland owners interviewed, 23 per cent stated

that they would not sell timber because they believed logging would conflict with their primary purposes of ownership (mostly recreational or residential use). Each of these owners held a small area, but together their holdings comprised nearly 11 per cent of the total area in the sample. The basis for their reluctance to sell is suggested by the fact that of the owners who made one or more timber sales, 40 per cent indicated dissatisfaction with the results of the logging.

This tendency to withdraw an appreciable proportion of the small-woodland holdings from commercial timber production is particularly pronounced in the holdings of less than 180 acres, which include about one-fifth of the small-woodland area and about 9 per cent of the total private forest land in the county. The rapid turnover of ownership, the increasing fragmentation of holdings, and the common purposes of ownership all indicate that these very small forest holdings are not likely to be an important source of timber in the future. Such withholding of lands from logging has a direct and immediate effect on the available timber supply.

Existing marketing practices also discourage the development of planned management on small woodlands. The passive role in the timber transactions played by those owners willing to sell indicates that strong interest in the income possibilities from small woodlands is not common. The basis of cutting has been dominated by buyer's choice, by the removal of all merchantable trees, or by diameter-limit cutting; timber marking and silvicultural considerations entered into only 3 per cent of the sales. In short, conscious provision for future growth from woodlands has been the exception. Deliberate land clearing was three times as common among the sample owners as silvicultural marking. In most of the cases studied, growth on the residual stands will be as much by chance of

nature as was the volume removed in the logging operation.

How can marketing from small woodlands be improved?

A diagnosis of the nature of current marketing practices does not automatically lead to the prescription of the remedy. Indeed, some of the conventional prescriptions such as price reporting, the use of written contracts, and the use of competitive bidding have been discounted as either unfeasible under the conditions in the county or as not necessarily effective.

Successful timber sales from small woodlands can be and are being made in Mendocino County. However, success in obtaining the full value of the timber cut and protecting the value of the timber remaining does not appear to be primarily a matter of following particular devices or procedures in the marketing process. The successful seller is well informed, careful in the selection of procedures, and active in the supervision of all aspects of the sale.

To improve woodland marketing, the small-woodland owners will have to increase their interest and knowledge, and the forest industries will have to develop more stable and organized purchasing methods to facilitate the market access of the sellers whatever their state of knowledge.

Needed: Well-informed owners

Small ownership has been fluid and unstable in Mendocino County. It is estimated that in 1957 there were 3,050 ownerships of rural land of less than 180 acres and another 815 holdings between 180 and 4,999 acres in size. Approximately 67 per cent of the number, with 51 per cent of the area, were held by owners new to the property since 1948. Another 13 per cent of the number and 33 per cent of the area were held by owners who held land in 1948 but who had

either increased or decreased the size of their holdings. Only 20 per cent of the number and 16 per cent of the area represented holdings unchanged since 1947.

Direct education of such a large number of fluid and unstable owners would be difficult. To a considerable extent, these characteristics of the ownerships explain why small-woodland owners made only limited use of technical assistance in marketing, and why they generally did not even know that such assistance was available.

Public agencies, through their service programs, can play an important role in this owner education by focusing attention on demonstration and by assisting on individual properties which, in turn, can serve as centers of influence. To succeed in these efforts, thorough consideration of the ownership structure and stability is essential. For example, concentration of the program on properties larger than 180 acres would reduce the number of potential contacts to 18 per cent of the total number of small holdings, while covering 82 per cent of the total land area in such holdings. Although this study has not been directly concerned with holdings from 5,000 to 20,000 acres, this size range is highly important for the future level of forest production in the county. Here 42 ownerships—largely held by livestock interests—include 38 per cent as much rural land as all 3,865 small holdings. Because manufactured products rather than standing timber are generally marketed from holdings larger than 20,000 acres, these ownerships are not of concern in terms of the types of issues considered here.

Private forestry consultants could also play an important role in providing marketing assistance and sales supervision for the woodland owners. Over two-thirds of the sales reported in this study amounted to \$2,000 or more, and one-third to more than \$10,000. Improved

handling of many of these sales would have provided an ample margin to repay the added expenses. Such services are available in the county, although small-woodland owners used them very little.

Needed: Stable, organized purchasing methods

Substantial improvement in woodland marketing directly through the owners is limited because tenure is unstable, the number of owners is large, and their main interest lies elsewhere. Just as the buyers have been the more active group in the current marketing situation, they are also the primary source from which improvements in marketing may come. The forest industries can do much to improve woodland marketing by establishing stable, organized purchasing methods.

It is true, of course, that the immediate interests of buyers and sellers are in opposition. Over a short period increased profits for the one likely mean decreased earnings for the other. However, over a longer period the development of permanent forest industries, based on wood grown on small holdings, benefits both buyers and sellers. Such permanent industries must rely on market forces to bring about the necessary continuous supply of timber from small holdings.

During the period of this study, woodland marketing in Mendocino County was dominated by unstable, shifting tenure on the side of the sellers, and by unstable, often temporary and short-lived mills or timber operators, on the side of the buyers. Both buyers and sellers had primarily short-term interests at heart, and it is not surprising that the resulting pattern has been disorganized and not conducive to long-term forest management.

Substantial improvement in marketing is likely to be achieved only through the introduction of some element of stability. The large population increase and

the developments in land ownership in California (for Mendocino County, described on pages 17 to 26) make it more probable that such stability can come from the forest industries than from the woodland owners. If the development of additional permanent forest industries in the county can be encouraged, it would be in their long-term interests to improve marketing institutions and practices. This has been the experience in other parts of the United States. The development of permanent forest industries has been accompanied by improved methods of measuring timber volumes, standardization of the terms of sale of standing timber, encouragement by the buyers to mark timber for cutting on a silvicultural basis, and greatly improved information about availability and interest of timber buyers. Even long-term contracts with small-woodland owners are being actively developed by some of the larger companies.

What can the individual woodland owner do to improve his market opportunities? He can take a more active part in the development of the sale; he can make use of the technical assistance available from public agencies and con-

sulting foresters; and he can closely supervise all phases of the transaction. General improvement in woodland marketing does not seem likely, however, through programs which concentrate solely on the seller. What is needed also are permanent and stable industries buying timber from woodlands on an organized purchasing basis.

The future forest economy of Mendocino County is favored by a large area of productive forest land in private ownership and well situated relative to major consuming centers in the state. Developments of the period since World War II have brought into an active timber market the 47 per cent of this private forest area which is in holdings of less than 5,000 acres. This market has been dominated by short-term interests and general instability for both buyers and sellers. It is clearly a transition market which cannot persist over a long period. If the transition is to lead to a permanent forest economy and not to a depleted resource and contracted industrial output, the development of improved woodland marketing must be recognized as dependent upon as well as essential to the development of improved and permanent forest industries.

THE FOREST ECONOMY OF MENDOCINO COUNTY

Resource base

Mendocino County is a mountainous area of 2,246,000 acres, fronting on the Pacific Ocean. The land resources, transportation routes, and pattern of development are oriented to the topography. The dominant features are two major north-south ridges of the Coast Range. These ridges are separated by the Russian River flowing southward and the Eel River flowing northwest, with the divide between the two drainages lying between the first and third largest communities in the county, Ukiah and Willits. The second largest community, Fort Bragg, is located on the coast. The major highway and rail transportation routes follow the Russian River-Eel River drainages, with the western of the ridges forming a substantial barrier to commerce between the coastal area and the developments along the central valleys.

This rugged terrain is largely covered with forests and brush (Baker and Poli, 1951).² Forest land suitable for growing commercial crops of wood includes 1,305,000 acres, or 58 per cent of the county's area. Open hardwood stands and chaparral cover another 609,000 acres, giving a total of 85 per cent of the area in forest or brush. The arable land is scattered in separate valleys along the main drainages and the coast.

The commercial-forest types are strongly controlled by the topography. Some 771,000 acres of redwood type form a fairly continuous forest cover beginning a short distance inland from the coast and covering most of the western front of the Coast Range. To the east of this lie 332,000 acres of Douglas-fir type in somewhat scattered areas, pri-

**Table 1. Distribution of Land,
Mendocino County, 1948**

| <i>Type of Land</i> | <i>Area in thousand acres</i> |
|--------------------------------------|---------------------------------------|
| Commercial forest land | |
| Pine | 29 |
| Redwood | 771 |
| Douglas-fir | 332 |
| Fir | 5 |
| Pine-Douglas-fir-Fir | 168 |
| Sub-Total | 1,305 |
| Noncommercial forest land | |
| Noncommercial coniferous types.... | 64 |
| Hardwood types | 154 |
| Timber-grass types | 229 |
| Chaparral | 162 |
| Sub-Total | 609 |
| Nonforest land | |
| Grass | 231 |
| Cultivated, urban, and industrial... | 75 |
| Coastal sagebrush | 7 |
| Barren | 15 |
| Marsh | 1 |
| Water | 3 |
| Sub-Total | 332 |
| Total—All land | 2,246 |

Source: Table 2, Baker and Poli (1951).

marily on the eastern face of the westerly of the two major mountain ridges of the county. On the easterly of the two ridges, largely in the northeastern part of the county, there is a broken pattern of 168,000 acres of pine—Douglas-fir—fir type and 34,000 acres of either pine type or fir type. The open hardwood and chaparral types occur characteristically on the lower slopes of the ranges.

In 1948 the forests of the county included 13,000 acres of old-growth, 447,-

(Continued on page 11)

² See Literature Cited.

Terms used in this bulletin

The classifications used in this study are based on those used in the Forest Survey conducted by the Pacific Southwest Forest and Range Experiment Station, U. S. Forest Service. The more important classifications used are defined below.

Land area

Commercial forest land. Forest land which (a) is producing, or is physically capable of producing, usable crops of wood (usually saw timber), (b) is economically available now or prospectively, and (c) is not withdrawn from timber utilization.

Noncommercial forest land. Forest land incapable of yielding usable crops of wood products (usually saw timber) because of adverse site conditions, or so physically inaccessible as to be permanently unavailable economically, or withdrawn from timber utilization for specific purpose. Includes chaparral land.

Nonforest land. Land that does not qualify as forest land. Includes land which has never supported forest growth; land from which the forest has been removed to less than 10 per cent stocking and has been developed for other use; all land in thickly populated urban and suburban areas; and water classified by the Bureau of Census as land.

Commercial timber types:

- a. **Pine:** areas with ponderosa, Jeffrey, or sugar pine comprising more than 80 per cent of the timber cover.
- b. **Douglas-fir:** areas with Douglas-fir comprising more than 80 per cent of the timber cover; or mixtures of Douglas-fir and the true firs in which Douglas-fir comprises 20 per cent or more of the timber cover.

- c. **Fir:** areas with true firs (white or red) comprising more than 80 per cent of the timber cover; or mixtures of the true firs and lodgepole pine, mountain hemlock, or western white pine, in which the true firs comprise 20 per cent or more of the timber cover.
- d. **Pine—Douglas-fir—Fir:** areas with mixtures of the commercial pines and either Douglas-fir or the true firs in which the pines comprise from 20 to 50 per cent of the timber cover.
- e. **Redwood:** areas with redwood comprising 20 per cent or more of the timber cover.

Classification of type of private ownership

Timber interests

Timber operating company. A corporation actively engaged in commercial logging and milling of timber as a major enterprise.

Timber holding company. A corporation holding timber land for future commercial timber operations. The timber may be held for the company's own future use or to sell to other operators.

Timber operating individual. A person whose major enterprise is commercial timber operations. This includes individuals logging timber, operating a large or small sawmill, or splitting timber commercially for sale.

Timber holding individual. A person holding timber land for future commercial timber operations. The timber may be held for his own future operations or to sell to other operators.

Agricultural interests

Range livestock farming company. A corporation engaged primarily in range livestock farming operations.

Range livestock farming individual. A person whose major enterprise is range livestock farming.

Other farmers. Persons or corporations that have farming as their major activity, but whose principal agricultural enterprise is not range livestock farming.

Miscellaneous interests

Recreational property owners. Persons or corporations holding land principally for recreational purposes.

Other classified owners. All other land owners whose classification is known but does not logically fit the classes listed above. Examples are owners of land held for residential purposes only, mining claims, and reservoir sites.

Other terms

Stumpage. In a general sense, standing timber. Also may mean the value of timber as it stands uncut in the woods.

Log scale. The lumber contents of a log, or of a number of logs considered collectively, based on a specific log rule. Scaling is the measurement of a log (or logs) to estimate its lumber volume, as indicated by a particular log rule and scaling practices.

(Continued from page 9)

000 acres of old-growth with a mixture of young-growth, 389,000 acres of young-growth with a mixture of old-growth, 242,000 acres of large young-growth, 103,000 acres of small young-growth, and 111,000 acres non-stocked (Baker and Poli, 1951). Although detailed Forest Survey data are not available for the county, it has been estimated that in 1954 there were about 22 billion board feet of timber in old-growth stands, 7 billion board feet in young-growth stands, and another 1 billion board feet scattered over non-stocked areas (May, 1954).

The economic structure of the county reflects this resource base. From its earliest development to the present time, lumbering and agriculture have been the mainstays of the area. An economic analysis of the county showed that in 1948 manufacturing (primarily of forest products) was the direct source of 34 per cent, and agriculture of 21 per cent, of the earned income with much of the balance coming from the servicing of these

two major forms of activity (Industrial Survey Associates, 1951). The main forms of agriculture are livestock ranching and the production of fruits and nuts. The more intensive forms of agriculture have been concentrated in the valley bottoms, while the livestock ranching has been in the hills, coming into direct contact with the timbered areas. In the past, attitudes toward land use in the county have been strongly colored by the traditional conflict between stock and timber. Recreational use of the county is well established, and many local groups hope for a major expansion of such activity in the future.

Forest industries

The first lumber mill in the county was established at Mendocino City in 1852. Within 20 years there were 19 mills in operation. Relying on coastal shipping in its early development, the industry for many decades was oriented primarily to the production of redwood lumber from the coastal forests. During

the early 1920s production was generally above 200 million board feet annually (figure 1), and in 1921 and 1922 Mendocino County ranked second among the counties of the state in lumber output (May, 1953). The subsequent decline was greatly accentuated by the depression period of the early 1930s, and it was not until the period following World War II that the county's lumber production regained and then greatly surpassed the previous highs. In 1956 production amounted to 874 million board feet (May and Baker, 1957)—14.9 per cent of the state total and 2.3 per cent of the national total for the year. Mendocino County has ranked second to Humboldt County in volume of output since 1948.

The veneer and plywood industry has developed entirely during the postwar period. In 1946 no veneer logs were produced in the county, while in 1956 an estimated 66 million board feet of veneer logs were cut (May, 1957). With two plywood plants and four veneer mills active in the county by the end of 1956, 51 million board feet of this volume were manufactured within the county, with

the balance going to mills in either Sonoma or Humboldt County.

Production of pulpwood has been very limited. The plant of Masonite Corporation at Ukiah represents one of the two large pulp operations in the state prior to 1957. This plant was originally intended to operate on pulp logs and Masonite became the second-largest landholder in the county. However, in recent years chips from sawmill residues have been the primary raw material. The Fibreboard operation at Antioch and the three roofing-felt plants in the San Francisco Bay area are also potential pulpwood markets for the county. Following the beginning of production at Masonite in 1950, pulpwood production in Mendocino County rose to a peak of 74.4 million board feet of pulp logs in 1952. Reflecting the general swing toward the use of chips, pulpwood production then declined steadily to 11.6 million board feet in 1956. For all practical purposes, there is no available pulpwood market for the average landowner.

The production of grape stakes, fence posts, and other split products from redwood is a long-established small-scale industry in the area. There is also some production of poles and piling, as well as a limited output of other minor forest products.

The general pattern of timber operations in the county is shown by the record of timber operators registering with the California Division of Forestry (figure 2). This record is somewhat incomplete, since production reports are obtained only from those timber operators who re-register during the following year, but it is the best available record of log output. These reports show a rapid rise from 210 million board feet in 1947, the first year of record, to a peak of 1,030 million in 1955. The dominant role of the lumber industry is shown clearly. Of the total volume of 990 million board feet reported for 1956, sawlogs represented

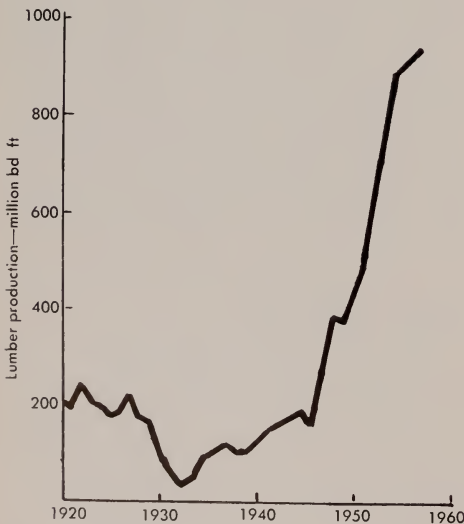


Fig. 1. Lumber production in Mendocino County, 1920-1956.

93.6 per cent, veneer logs 4.2 per cent, pulp logs 1.2 per cent, and other products 1.0 per cent.

Lumber and land

The great expansion in the lumber industry has been the driving force in the county's economy during the period after World War II. As shown in table 2, lumber production doubled from 1946 to 1947, doubled once more by 1951, and then expanded half again in size during the following five years. Production in 1956 was six times as high as that in 1946. This record appears the more remarkable when it is noted that nationally lumber production has shown no change from 1951 to 1956, and that output in 1956 was only 10.5 per cent higher than in 1946.

In addition to lumber production within the county, there is a net movement of logs out of the county for lumber manufacture elsewhere. In 1956 a net transfer of 17 million feet of logs from Humboldt County into Mendocino County was far more than offset by the movement of 37 million feet from Men-

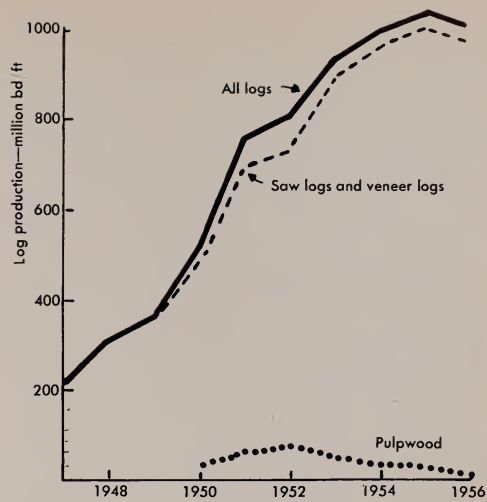


Fig. 2. Log production in Mendocino County as reported by registered timber operators, 1947-1956.

docino County to Sonoma County (May and Baker, 1958).

Throughout the period Douglas-fir and redwood dominated the lumber output. In 1946 Douglas-fir formed 43.7 per cent of the total and redwood 46.6 per cent (May and Simontacchi, 1947). In 1951, Douglas-fir production was 40.4 per cent,

Table 2. Number of Active Sawmills and Lumber Production, Mendocino County, 1945-1956

| Year | Number of active sawmills | Lumber production in million board feet | | | | | |
|------|---------------------------|---|---------|-------------|-------|-----------|-------|
| | | Total | Redwood | Douglas-fir | Pine | True firs | Other |
| 1946 | 93 | 144.7 | 67.4 | 63.2 | 11.4 | 1.7 | 0.9 |
| 1947 | 93 | 283.7 | ..... | ..... | ..... | ..... | ..... |
| 1948 | 129 | 386.9 | 242.3 | 119.6 | 5.3 | 0.3 | 0.2 |
| 1949 | ... | 376.0 | ..... | ..... | ..... | ..... | ..... |
| 1950 | ... | 440.0 | ..... | ..... | ..... | ..... | ..... |
| 1951 | 126 | 585.6 | 321.5 | 237.2 | 24.4 | 2.3 | 0.1 |
| 1952 | ... | 610.0 | ..... | ..... | ..... | ..... | ..... |
| 1953 | ... | ..... | ..... | ..... | ..... | ..... | ..... |
| 1954 | ... | 772.0 | 360.5 | 310.2 | 50.1 | 48.0 | 3.2 |
| 1955 | ... | ..... | ..... | ..... | ..... | ..... | ..... |
| 1956 | 105 | 874.4 | 361.2 | 463.5 | 37.3 | 12.3 | 0.1 |

Based on data compiled by the California Forest and Range Experiment Station, U. S. Forest Service. Data for 1954 are from Census reports. Species data for 1948 exclude production of 19.35 million board feet included in the total and produced in the extreme eastern part of the county.

and redwood 56.5 per cent of the total. In the period from 1951 to 1956, which is of particular interest in this study, this pattern shifted, and by 1956 Douglas-fir had risen to 53.0 per cent of the total, while redwood dropped to 41.3 per cent (May and Baker, 1957).

The sawmill population of the county changed rapidly during the postwar period, although the total number of mills operating changed only moderately. The redwood strike of 1946 kept four of the major sawmills of the county idle for about six months, thus reducing total output but also encouraging the development of smaller mills. In 1946 some 93 mills produced 145 million board feet compared to 195 million from 47 mills in 1945. By 1951 production had risen to 586 million and there were 126 active mills in the county. Fourteen of these mills had an annual output of more than 10 million each, and together produced 50 per cent of the total output. From 1951 to 1956 expansion was centered in these medium and large mills, with the total number of mills dropping to 105 while production rose to 875 million board feet. Thirty-two mills producing more than 10 million feet annually provided 73 per cent of the total output, while the smaller mills declined both in numbers and in output.

Many of the mills established during this postwar period were short-lived. Of the 93 mills operating in 1946 only 22 were still operating in 1956, producing 40 per cent of the total output of that year. Moreover, of these 22 mills only 13 were still held by the same owners as in 1946. Thus 72 per cent of the lumber production in 1956 was from mills that were either new or under different owners than in 1946. (May, personal communication.)

Although the number of mills operating in the county was fairly stable, the number of timber operators, many of whom were independent loggers without

formal affiliation with any mill, increased substantially. There were 69 registered timber operators in 1948 (the first year in which registration was required), 139 in 1951, and 277 in 1956.

The sharp contrast between the pattern of expanding lumber production in Mendocino County and the relative stability of production nationally is explained primarily by the ready availability of timber in the county. To understand this relationship between lumber and land, it is necessary to review some of the highlights of the ownership of the forests which supported this expansion in output.

It is estimated that in 1948 four-fifths of the commercial forest land of the county was privately owned and one-fifth was in public ownership (table 3). Public ownership was particularly important in the pine—Douglas-fir—fir, fir, and pine types of the northeastern part of the county where such ownership (primarily federal) included 58 per cent of the commercial forest area as contrasted with 11 per cent (primarily state) in the redwood type and 13.5 per cent (primarily federal) in the Douglas-fir type. Timber-operating and timber-holding companies and individuals owned 38 per cent of the commercial forest area. These holdings were concentrated in the redwood type, in which private timber interests held 60 per cent of the area. Range livestock and other farming companies and individuals held 32 per cent of the commercial forest area, including 58 per cent of the area in the Douglas-fir type. Individuals and companies interested in recreational and miscellaneous uses of the land held the remaining 10 per cent of the commercial forest area.

This relationship between types of ownerships and timber types is reflected also in the relationship between size and timber type (table 4). Holdings of less than 5,000 acres included 49 per cent of

Table 3. Commerical Forest Land, Mendocino County, by Type of Ownership and by Timber Types, 1948

| Type of ownership | Total | Timber type | | |
|--|----------------|-------------|-------------|------------|
| | | Redwood | Douglas-fir | Other |
| | Thousand acres | | | |
| Federal | 158 | 8 | 36 | 114 |
| State or local government | 91 | 78 | 9 | 4 |
| Total public ownership | 249 | 86 | 45 | 118 |
| Timber interests | 502 | 460 | 28 | 14 |
| Range and farming interests | 420 | 166 | 193 | 61 |
| Recreational and miscel. interests | 134 | 59 | 66 | 9 |
| Total private ownership | 1,056 | 685 | 287 | 84 |
| All types | 1,305 | 771 | 332 | 202 |

Source: Baker and Poli, 1951.

the private commercial forest land, with 40 per cent of privately held redwood type and 70 per cent of the Douglas-fir type. In contrast, holdings of 50,000 acres and larger include 18 per cent of the private commercial forest land. These large holdings consisted almost exclusively of forests in the redwood type and amounted to 29 per cent of the private holdings in that type.

In these statistical relationships between lumber production and forest-land ownership lies much of the story of de-

velopments in Mendocino County during recent years. In 1948 companies and individuals engaged in timber operations as a major enterprise held 27.5 per cent of the commercial forest land, almost entirely in the redwood type. The great expansion of lumber production necessarily had to be based in major degree on timber obtained from other types of ownerships. The development of cutting on the public forest lands was on a conservative basis controlled by sustained-yield considerations. Much the same was

Table 4. Privately Owned Commercial Forest Land, by Size of Ownership and by Timber Types, Mendocino County, 1948

| Size of ownership in acres | Total | Timber type | | |
|----------------------------------|----------------|-------------|-------------|-----------|
| | | Redwood | Douglas-fir | Other |
| | Thousand acres | | | |
| Unclassified | 11 | 3 | 7 | 1 |
| Less than 5,000 acres | 522 | 277 | 205 | 40 |
| 5,000-49,999 acres | 330 | 213 | 74 | 43 |
| More than 50,000 acres | 193 | 192 | 1 | ... |
| All sizes | 1,056 | 685 | 287 | 84 |

Source: Baker and Poli, 1951.

true of the large forest properties in the redwood type during this period. The brunt of the expansion was borne by other types of forest ownership. From the nature of the ownership pattern and the composition of the lumber output, it can be seen that this would be especially pronounced in the Douglas-fir type, although developments in the small and medium holdings in the redwood type were generally similar.

In this process extensive forest areas considered as having little if any commercial timber value were brought into an active timber market. The owners characteristically had had little experience in timber marketing and their primary interests were generally in other fields. With the rapid changes in small mills and the widespread role of independent loggers in supplying these mills, it is clear that the market facing many of the small owners consisted to an important degree of buyers with none of the attributes of permanence. Thus the general scene in which lumber and land have been coming together into new relationships in Mendocino County during recent years has been dominated by a production boom, in which one important element has been the establishment of market relationships between holders of comparatively small forest properties and operators of comparatively small and frequently temporary logging and milling enterprises.

Forestry and markets

During 1957 and 1958 Mendocino County was affected by the national decline in lumber demand. Production in the county dropped, and a number of small mills closed. The importance of lumber to the economy has been brought home to the entire business community. With this realization, there has been an increasing concern about the county's timber future. To what extent will lum-

ber production expand once again when demand for lumber rises?

In the absence of detailed and localized data on timber volumes and timber growth in the county, the possibilities for the future are far from clear. It has been estimated that the ratio of cut to growth for Douglas-fir in the entire North Coast region in 1952 was 3.8 to 1 (California Forest and Range Experiment Station, 1954). By 1956 this region may well have been cutting Douglas-fir some 4.5 times as fast as it is growing it. With the different ownership structure in redwood being reflected in more conservative cutting policies, the ratio of cut to growth for this species in 1956 was perhaps something more than 2.5 to 1. Not all stands are being cut this heavily, which means that the more readily available stands are being reduced more rapidly than these estimates suggest.

The outcome of this situation will depend upon numerous and diverse factors which can be grouped under the general headings of forest management and wood utilization. In terms of the forest economy of the county, the two are inseparable, with developments in one facilitating and depending upon developments in the other. Organizationally, however, much of the forest land of Mendocino County is under separate control from that of the wood utilization plant. As long as this situation persists, the timber market will play a fundamental role in developments in the county. It is only through this market that the forces of demand can reach the nonintegrated timber owner and affect his management decisions. Similarly, it is only through the market that the nonintegrated wood-utilization plants can obtain raw materials for processing. Thus an effective market is essential to an effective forest economy in the county.

For either private or public planning in the area's forest economy there is need for information concerning the current

structure of land ownership, its stability, and its direction of change in recent years. There is also need for a clear understanding of the workings of the timber market of the area and its effec-

tiveness from the standpoints of the land-owners and of the timber industries. The balance of this report is devoted to these two questions.

THE CHANGING STATUS OF LAND OWNERSHIP

Basis of the study

An intensive study of land ownership involving a 100 per cent coverage of the area was carried out in northern Mendocino County in 1944 (Poli and Griffith, 1948). On the basis of this complete survey a method for sampling land ownership was developed (Hasel and Poli, 1949) and later applied to the entire county (Baker and Poli, 1951) as a part of the Forest Survey conducted by the California Forest and Range Experiment Station, U. S. Forest Service. Essentially, the method superimposed a grid of east-west lines with a two-mile spacing between lines on maps of the cover types and the ownership plats in the county assessor's office. Total holdings for each ownership intercepted were then determined by consulting the records in the tax collector's office. The total number of ownerships, area of commercial forest land, and similar matters were estimated from this sample by the use of various statistically developed expansion factors. The field work for the county-wide study was carried out in 1947 and the first part of 1948, but all data were listed under the 1948 date in the report. The results of this study included estimates both for all land and for commercial forest land of the number and area of ownerships by type of ownership and, for the private land, by size class of ownership.

The present study, undertaken in the fall of 1956, initially intended to use the working papers of the Forest Survey study as the basis for developing an address list of a sample of forest owners.

In checking this material against records in the county assessor's office, it became apparent that major changes in ownership had occurred during the period of approximately 10 years. Thus it was necessary to make a complete resurvey of land ownership in the county.

The ownership survey made during 1957 was based on the method developed for the Forest Survey with minor modifications and repeated exactly the same sample lines used in the earlier study.³ Two points on procedure should be made clear: First, every property larger than 2,600 acres was included in the survey, but ownership data for properties less than 2,600 acres were estimates based on a sample. It is estimated that the survey included 25 per cent of the total number of ownerships of private rural land in the county, but 83 per cent of the total area of such land. Second, all information concerning individual ownerships used in this study is based on public records in the county offices.

All private rural land in the county was sampled in this 1957 ownership survey. However, time did not permit separate sampling of forest-land ownership such as was carried out in the 1948 survey. Thus it is possible only to approximate the areas of commercial forest land by types of ownership and size classes in 1957, under the assumption that within each classification the ratio of commercial forest land area to total land area

³ A full discussion of methods and special problems in comparing the two studies has been prepared by Casamajor (1958). Copies of this report may be borrowed from the School of Forestry, University of California, Berkeley.

was the same as in 1948. Since some selectivity is presumably involved in the transfer of particular areas from one ownership class to another, this assumption may not be completely correct. However, these approximations are believed usable for bringing out the general pattern of change in forest ownership which has taken place in the county.

Land ownership in 1957

The 2,246,000 acres of land in Mendocino County, including some 1,305,000 acres of commercial forest land, are primarily in private ownership (table 5). According to the 1948 survey, federal, state, county, and municipal lands included 20.6 per cent of the area, with private holdings making up the remainder. This ratio of public to private ownership has remained the same up to 1957 when the present survey showed the area in private ownership to be very nearly equal to that reported 10 years previously.

The balance of this discussion is limited to the privately owned rural land in the county. It is estimated that the 1.8 million acres of such land were held in 3,917 separate ownerships in 1957. By size of ownership, the land was distributed as shown in Table A below.

Distribution of private rural land.

As would be expected, the greater part of the ownerships is concentrated in the small size classes (appendix table 3). However, the 3,050 ownerships of less than 180 acres held less than 10 per cent

of the private rural land (appendix table 4). When combined with 815 other ownerships of less than 5,000 acres, small ownerships included more than half the land area—54 per cent. There were 52 medium- and large-size ownerships; they constituted only 1.5 per cent of the ownerships, yet held 46 per cent of the private rural land. Within this group, two ownerships of more than 50,000 acres held 13 per cent of the total private rural land area.

Distribution of private commercial forest land. As shown in the right column of Table A below, ownership of commercial forest land differed in important aspects from that of all rural land. Large ownerships of more than 50,000 acres held a larger proportion of the commercial forest area than they did of all rural land, while the small-size properties of less than 5,000 acres held a smaller proportion. The small ownerships of less than 5,000 acres included slightly less than half the commercial forest land, while medium- and large-size ownerships held slightly more than half.

The ratio of commercial forest area to all land increases with size of ownership for the classes larger than 5,000 acres, as shown in the following table:

| <i>Size of ownership</i> | <i>Per cent commercial forest land is to total land area</i> |
|-----------------------------|--|
| Less than 180 acres..... | 57 |
| 180-4,999 acres | 52 |
| 5,000-49,999 acres | 61 |
| More than 50,000 acres..... | 98 |

| Table A | <i>Per cent of total number of ownerships</i> | <i>Per cent of private rural land area</i> | <i>Per cent of private commercial forest area</i> |
|------------------------------|---|--|---|
| Less than 180 acres | 77.7 | 9.7 | 9 |
| 180-4,999 acres | 20.8 | 44.5 | 38 |
| 5,000-49,999 acres | 1.4 | 32.4 | 32 |
| More than 50,000 acres | 0.1 | 13.4 | 21 |
| | 100.0 | 100.0 | 100 |

Table 5. Total Land Area by Major Ownership Classes and Land Types, Mendocino County, 1948*

| Ownership class | Commercial forest land | | Noncommercial forest land | | Nonforest land | | Total land | |
|------------------------------|------------------------|----------|---------------------------|----------|----------------|----------|----------------|----------|
| | Thousand acres | Per cent | Thousand acres | Per cent | Thousand acres | Per cent | Thousand acres | Per cent |
| PUBLIC OWNERSHIP | | | | | | | | |
| Federal | | | | | | | | |
| National forest | 93 | 4.1 | 69 | 3.1 | 12 | 0.6 | 174 | 7.8 |
| Indian | 10 | 0.4 | 4 | 0.2 | 7 | 0.3 | 21 | 0.9 |
| Other† | 55 | 2.5 | 102 | 4.5 | 7 | 0.3 | 164 | 7.3 |
| | | | | | | | | |
| Total federal | 158 | 7.0 | 175 | 7.8 | 26 | 1.2 | 359 | 16.0 |
| State, County, and Municipal | 91 | 4.1 | 7 | 0.3 | 4 | 0.2 | 102 | 4.6 |
| | | | | | | | | |
| TOTAL PUBLIC OWNERSHIP | 249 | 11.1 | 182 | 8.1 | 30 | 1.4 | 461 | 20.6 |
| PRIVATE OWNERSHIP | 1,056 | 47.0 | 427 | 19.0 | 302 | 13.4 | 1,785 | 79.4 |
| | | | | | | | | |
| TOTAL LAND | 1,305 | 58.1 | 609 | 27.1 | 332 | 14.8 | 2,246 | 100.0 |

* Adapted from Table 1, Baker and Poli (1951)
† Chiefly public domain (Bureau of Land Management).

For smaller classes, the ratio varies but is generally lower than for medium and large ownerships. These relationships account for the fact that although small ownerships hold more than half of the private rural land, they hold less than half of the commercial forest land in the county.

Type of ownership shows a pattern related to that of size of ownership. Table B below shows how the private rural ownerships in the county are distributed among different types of ownerships. (See page 10, for definitions of types.)

As this table suggests, there are major differences in the size of ownerships characteristic of the various ownership types. Ownerships held primarily for miscellaneous purposes are generally small—none is larger than 2,600 acres, and 46 per cent are smaller than 180 acres (appendix table 4). These miscellaneous interests hold only 11 per cent of the commercial forest area, but make up 61 per cent of the total ownerships. Similarly, the area held by farming interests other than range-livestock is mostly in small properties of less than 2,600 acres. In contrast, the area held by range-livestock interests is characteristically in

holdings ranging from 2,600 acres to 20,000 acres. For the whole county, these range-livestock interests hold 75 per cent of all land in ownerships ranging from 2,600 to 20,000 acres. These various relationships are shown in the table at bottom of this page.

The land held by timber interests shows the greatest degree of concentration in large holdings (Table C). Within the group, there is considerable difference in the size of timber operators and timber holders (Table D, page 21). The former are generally large, and hold 90 per cent of the rural land in private ownerships of more than 20,000 acres and 86 per cent of all land held by timber interests (appendix table 4).

Location of land owners. In this study the address of each ownership as listed in the tax collector's office was recorded for all ownerships included in the sample. An address within the county does not necessarily mean that the property is occupied. The general pattern of private rural land ownership by address of owners shows that slightly more than one-third of the ownerships, representing slightly more than one-third of the private rural land area, have owners with an address outside the county (appendix

Table B

| <i>Ownership primarily interested in:</i> | <i>Per cent of total ownerships</i> | <i>Per cent of private rural land</i> | <i>Per cent of private commercial forest area</i> |
|---|-------------------------------------|---------------------------------------|---|
| Timber | 11.4 | 38.7 | 56 |
| Range-livestock | 13.8 | 43.7 | 29 |
| Other farming | 13.8 | 5.9 | 4 |
| Miscellaneous purposes | 61.0 | 11.7 | 11 |
| | 100.0 | 100.0 | 100 |

Table C

| <i>Size of ownership</i> | <i>Timber</i> | <i>Range-livestock</i> | <i>Other farming</i> | <i>Miscellaneous purposes</i> |
|-----------------------------|-------------------------------|------------------------|----------------------|-------------------------------|
| | <i>Per cent of rural land</i> | | | |
| Less than 2,600 acres..... | 19.5 | 34 | 96 | 100 |
| 2,600-19,999 acres | 22.0 | 60 | 4 | 0 |
| More than 20,000 acres..... | 58.5 | 6 | 0 | 0 |
| | 100.0 | 100 | 100 | 100 |

Table D

| | <i>Timber-operating</i> | <i>Timber-holding</i> |
|------------------------------|-------------------------|-----------------------|
| | <i>Per cent</i> | |
| Less than 2,600 acres | 11 | 72 |
| 2,600-19,999 acres..... | 21 | 28 |
| More than 20,000 acres | 68 | 0 |
| | 100 | 100 |

table 5). More than half of these owners have addresses in the San Francisco Bay area, which includes one-fifth of the total owners of rural private land in Mendocino County. Generally there is a striking parallelism in the distribution of number of owners and of area owned. The average size of ownerships for owners with addresses in the county is 467 acres, and that for owners outside the county 463 acres. The most notable divergence from this pattern is for ownerships in which the owner's address is outside of California. Such ownerships average 1,310 acres in size, but their number is too small to be of any particular significance.

There is, however, considerable variation among the types of ownership in the proportion of owners with addresses inside the county. It is estimated that 557 recreational property owners have addresses outside the county compared to 211 within the county, that 6 range livestock farming companies have addresses outside compared to 2 within the county, that 131 timber holding individuals have addresses outside compared to 79 within the county, and that all 16 timber holding companies have addresses outside the county. All other ownership types recognized in the study have a predominance of owners with addresses inside the county.

**Change in land ownership
1948-1957**

During the period from 1948 to 1957 the population of Mendocino County grew from 34,300 to 52,230, an increase of 52 per cent as compared to 44 per cent for California. This population

increase, together with the tremendous expansion in lumber production during this decade, was bound to have a great impact on the ownership of land. The 1948 Forest Survey data and the present study provide a basis for determining the effects of this decade of change on land ownership in the county. As noted previously, no significant changes occurred in public-land ownership during this period in Mendocino County, so the full impact of change was concentrated on the privately owned land. This discussion will be limited to the privately owned rural land of the county.

Size of ownership. As shown in figure 3, no major shifts in the relative distribution of the rural land among the individual size of ownership classes occurred during the period, but the cumulative effects are of some importance. The private rural land in ownerships of less than 2,600 acres declined from 45.7 per cent of the total area in 1948 to 39.8 per cent in 1957. Some but not all the size classes larger than 2,600 acres showed increases. A generally similar pattern is shown for commercial forest land.

In broad terms, then, rural land tended to move from smaller toward larger ownerships. A more detailed study of the shifts will clarify the full significance of. Thus the number of ownerships larger the complex pattern of the shifts which occurred (see appendix table 7).

During the period from 1948 to 1957 the estimated number of private rural land ownerships increased from 3,233 to 3,917—a net increase of 684 ownerships. However, the number of ownerships of less than 180 acres increased by 712.

than 180 acres actually decreased. This 30.6 per cent increase in the number of ownerships of less than 180 acres occurred at the same time that the total area of such ownerships was decreasing by 14 per cent. Thus the average size of holding in the less-than-180-acres class decreased by 34 per cent from 88 to 58

acres. This increasing fragmentation of the one-tenth of the private rural land of the county in the smallest-size class is one of the most striking developments in land ownership in the decade, and has implications for the future management of this area (see page 6).
Although there was a slight overall

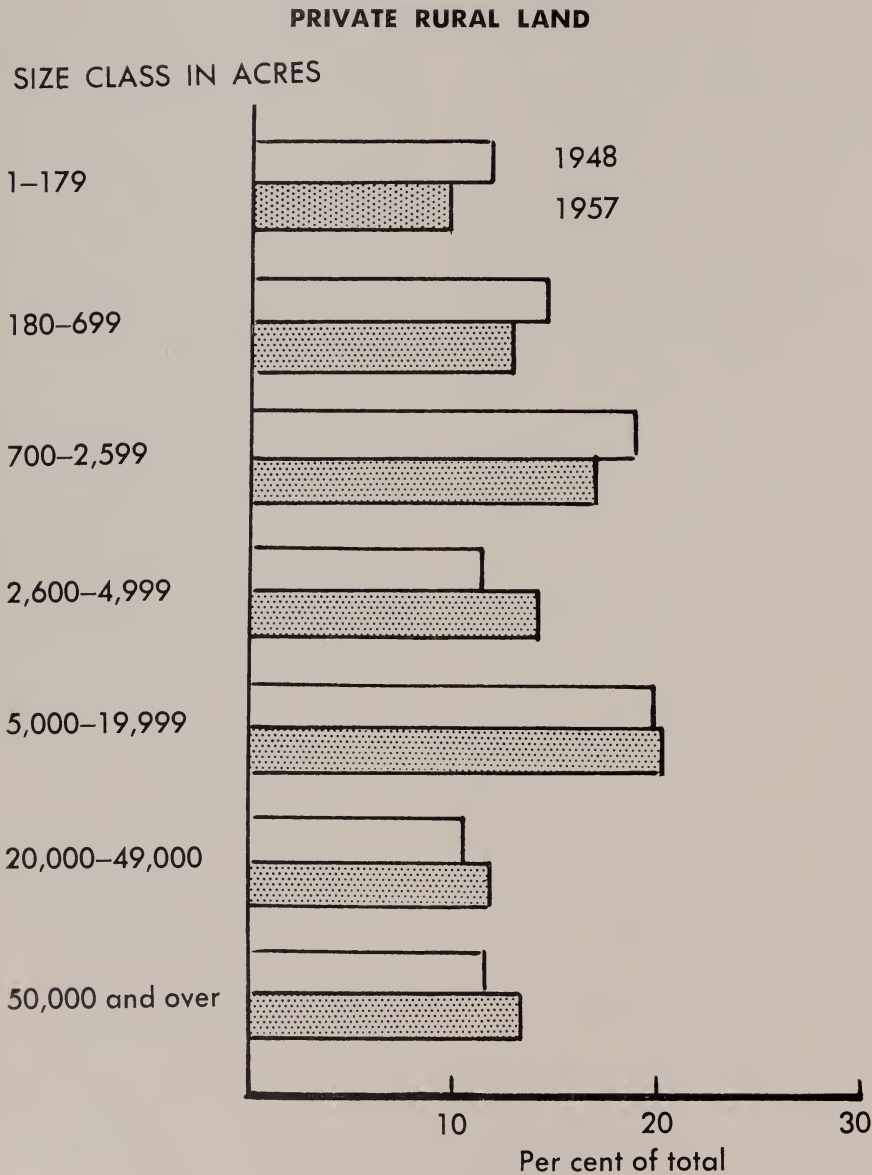
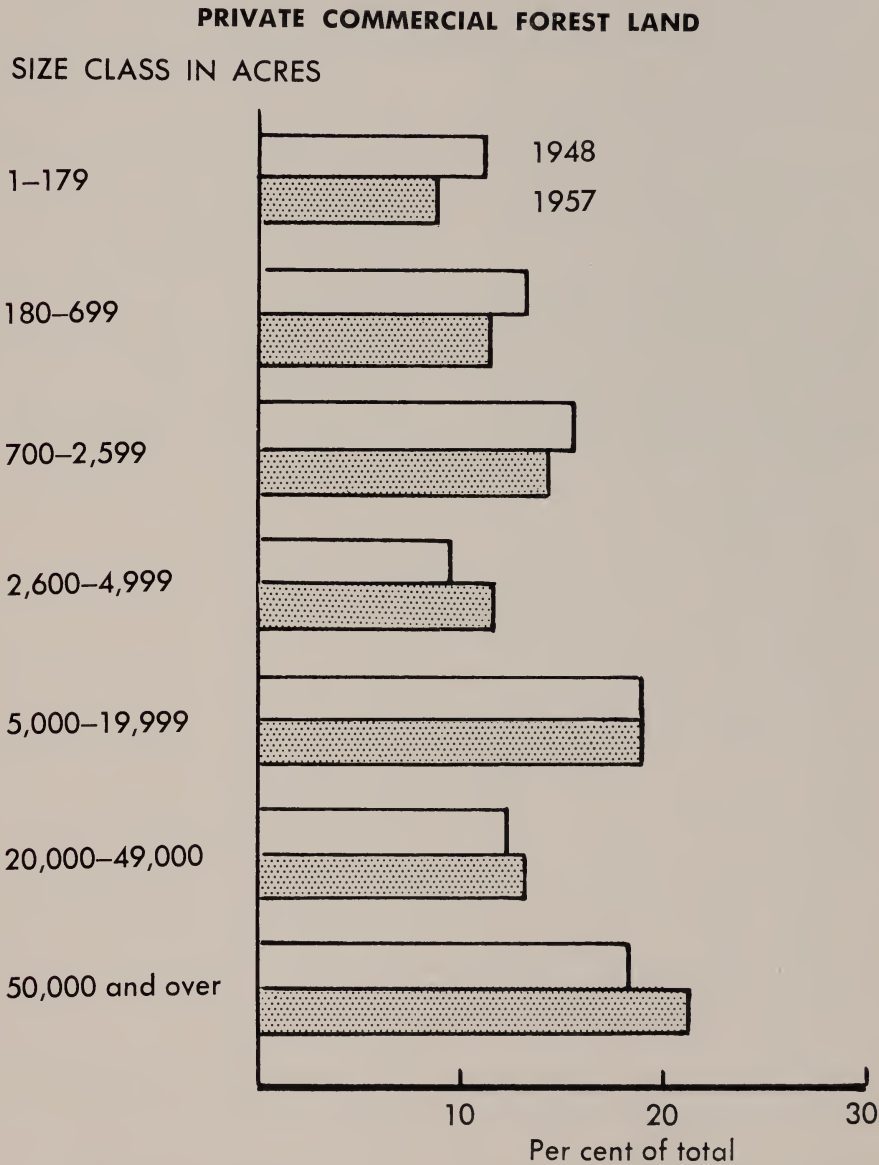


Fig. 3. Comparison of private ownership,

decrease in the number of ownerships larger than 180 acres, in detail the pattern was erratic, with increases in some classes and decreases in others. Along with this went a shift of land area, which in general was toward larger-size classes but which in detail involved concentration in several classes. This is shown in

figure 4. A particularly striking relationship in this pattern is the pronounced decline in the area of holdings between 30,000 and 49,999 acres, with equally pronounced increases in the areas of the next smaller and next larger size classes. As these relationships suggest, any tendency for the large to get larger in



Mendocino County, by size of ownership, 1948 and 1957.

Mendocino County is by no means universal. This is brought out clearly by ranking the ownerships in order of size. The two largest ownerships in 1957 were also the two largest in 1948, and they increased in combined acreage by 24 per cent during the decade. However, the ownerships which ranked from third through eighth in 1957 were consistently smaller than their counterparts in 1948, with their aggregate acreage being 13 per cent less. From the ninth largest ownership to approximately the 760th the 1957 ownerships are larger than those in 1948. In each of these years the 760th ranking ownership was about 220 acres in size. Ownerships smaller than the 760th rank were smaller in 1957 than their 1948 counterparts.

Type of ownership changed more pronouncedly during the decade than size (appendix table 8). The dominant pattern shows a shift from other types of ownership into the ownerships of timber-operating companies and individuals.

The area owned by timber operators increased from 21 per cent of the total private rural land in 1948 to 33 per cent in 1957, while their holdings of private commercial forest land expanded from one-third of the total to nearly one-half. The area held in each of the other types of ownership declined, both in all rural land and in commercial forest land, with the decline in each instance being appreciable. Timber interests (timber holders plus operators) increased their share of the private rural land in the county from 30 per cent to nearly 39 per cent and their share of private commercial forest land from 47 per cent to about 56 per cent.

The greatest part of the increase in number of ownerships came in the other classified owner type, which increased from 1,026 to 1,604. Recreational-property owners increased from 637 to 768. Timber operators showed the greatest relative increase in numbers, with timber-operating companies increasing from

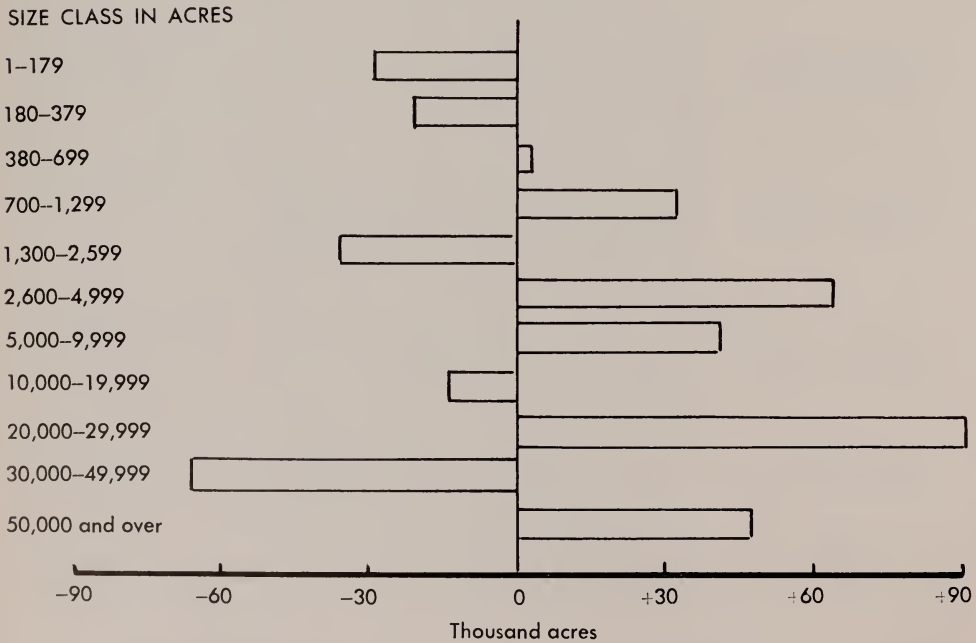


Fig. 4. Change in area of rural private land, Mendocino County, by size of ownership classes, 1948-1957.

29 to 69 ownerships and timber-operating individuals from 78 to 150 ownerships. Farmers other than range-livestock farmers showed the greatest decrease, dropping from 669 to 541. Timber-holding companies showed a pronounced relative decline with a drop from 26 to 16 ownerships. The other types remained fairly stable in numbers.

With these changes in areas and number of ownerships by types, there were appreciable changes in the average size of holdings by types of owners as shown in appendix table 8.

Stability of ownership is an important factor in the management of land, especially where it concerns long-term programs such as timber growing. Since the present ownership study repeated the sample used in the Forest Survey study, the two studies give a direct measurement of the net change in ownership during the decade 1948-1957.⁴

The change in ownership status of private rural land during the decade, on all land types combined, is summarized here:

| | <i>Number of Owners Per cent</i> | <i>Area owned in 1957 Per cent</i> |
|-------------------------------------|--|--|
| Same Owners | | |
| Same Acreage | 19.4 | 10.6 |
| Same Owners | | |
| Smaller Acreage | 8.1 | 7.9 |
| Same Owners | | |
| Larger Acreage | 5.9 | 33.5 |
| New Owners to the Property | 66.6 | 48.0 |
| Total | 100.0 | 100.0 |

As this table indicates, two-thirds of the 1957 owners, with nearly half the private rural land, were new since 1948. About 6 per cent of the owners, with one-

⁴ Properties with more than one recorded owner were considered in changed ownership if at least 50 per cent of the owners had changed. In the case of joint ownership by husband and wife, ownership reverting to one or the other due to death or divorce was not treated as a change in ownership. Transfer of ownership to children was considered a change.

third of land, were the same as in 1948, but had increased the size of their holdings. Another 8 per cent of the owners, with about 8 per cent of the land, were the same as 10 years before, but had reduced the size of their holdings. Only one-fifth of the ownerships, with one-tenth of the private rural land, remained completely unchanged during this period. Since these relationships reflect only the net change from 1948 to 1957, the total amount of change must have been even greater. It is evident that rural land ownership in Mendocino County was highly unstable during the decade studied.

There were striking differences in the degree and type of change shown by the various types of ownership in the county (appendix table 10). About 11 per cent of the number of timber-operating companies, with nearly half of the land in such ownerships, had remained the same since 1948, but their acreage had increased, while 83 per cent of these ownerships, with slightly more than half the land, were new in 1957. Thus the holdings typical of the new timber-operating companies in the county were very much smaller than those of the companies continuing in land ownership. Three-fourths of the ownerships held by timber holders and timber-operating individuals, including 70 per cent of the area of such holdings, was in the hands of new owners in 1957.

About 20 per cent of the ownerships held by range-livestock interests, with 38 per cent of the land in such holdings, were the same ownerships as previously but with larger acreages, while 46 per cent of these ownerships, with another 39 per cent of the land, were new owners. Other farmers showed more stability, with one-third of the ownerships, and nearly 30 per cent of the land, representing the same owners with the same acreage. However, 40 per cent of these owners with 40 per cent of the land represented new owners.

In the case of properties held for miscellaneous uses, three-fourths of the number of ownerships, with 60 per cent of the area, represented new owners. Nearly one-fifth of such ownerships, however, with almost one-fourth of the area were the same owners with the same acreage as in 1948.

In terms of size of ownership (appendix table 9), nearly 35 per cent of the number of all private rural ownerships in the county in 1957 consisted of new owners with holdings of less than 40 acres. The pronounced instability of such holdings is indicated by the fact that 80 per cent of all ownerships in this size class, with three-fourths of the area of such land, were in the hands of new owners. Somewhat surprisingly, ownerships in the size class 40 to 179 acres

showed the greatest stability, with 30 per cent of the number and one-third of the area being in the same ownerships with the same acreages as in 1948. However, new owners held 60 per cent of the number and area of these ownerships.

In properties larger than 2,600 acres, the proportion of numbers and area represented by the same owners with the same acreage fell off rapidly, and all ownerships larger than 20,000 acres in 1957 were held either by the same owners with larger acreages or by new owners to the property.

Against this background of a rapidly changing ownership pattern the timber economy and market have developed in Mendocino County. The following section focuses attention on the marketing of forest products.

WOODLAND MARKETING PRACTICES

Timber marketing

Timber marketing in this report refers to the selling and buying of stumpage (the right to cut standing timber) or logs, the chief concern being the exchange of these products between small forest owners and timber buyers. Sales involving title to both land and timber are not included, although there have been many such sales in Mendocino County in recent years. This study is concerned with the sale of timber as the product of the land, not with the sale of the entire enterprise.

Marketing has been well described as "the focal point of the entire process of forestry" (Duerr, 1949).⁵ Hence it is es-

sential that market relationships and marketing practices operate to result in adequate returns to the productive efforts of forest owners and the timber buyers. In the case of small-woodland owners in Mendocino County, marketing assumes an even more prominent role, as the sale of timber is ordinarily the only act of forest management. Because of this synthesis of management and marketing, the impact of established marketing customs on silviculture and the forest is of particular interest and importance. And in a market situation where buyers dominate the small primary producers, buyer practices and policy are crucial elements in determining the position of small woodlands in the total forest-resource picture. The existence of major imperfections in timber-marketing practices may favor one group or the other over short periods, but over the longer period in which timber becomes a material produced by economic activity rather than an unplanned product of nature, the market becomes a two-way street. Efficient markets then work to the benefit of buy-

⁵ Duerr writes that "...In marketing, the products of the forest are released for consumption. The aims of forest policy and the work of forest management are culminated and made to bear fruit. It is the character of the market, as a reflection of consumer's demands, that shapes forest-management policies; and it is the efficiency of the market as a reflector of those demands that determines how well the goal of optimum benefit may be seen by the forest manager as an individual negotiator in the market..." p. 162.

ers and sellers and the economy as a whole.

In the past, timber marketed by small owners in Mendocino County has largely been an untended, unplanned product, the ownership of which was incidental to the main objective of holding land. This is partly responsible for a rather general lack of interest in and knowledge of timber and marketing, and the marketing pattern which has developed in response to the needs of a rapidly expanding industry has reflected this attitude. The extent to which this pattern has provided—and will provide—equitable returns to woodland owners, and the direct effect it has had on the forest itself, will be a major factor in determining the extent to which timber is intentionally grown and the amount that can be regularly harvested.

Research methods

To obtain information concerning woodland-marketing practices in Mendocino County, detailed field interviews were conducted with a representative sample of 126 owners of woodland properties less than 5,000 acres in size. (See appendix table 11 for sampling details.) Foresters and public officials were also consulted. These interviews were conducted over the one-year period extending from spring 1957 to the spring of 1958. Mail questionnaires were sent to those few owners whose residence made personal contact impractical.

For each ownership included in the sample, data were collected on the character of the forest and on the sales of timber for the period 1950–1957. Timber sales were discussed in detail with each of the 58 owners who had made a sale. Information was recorded on questionnaires for the following: general sale characteristics including year of sale, volumes and prices of products sold, point of sale, sale experience, and reason for making sale; marketing practices including buyer selection, price determi-

nation, contractual arrangements, method of payment, product measurement, harvesting method, and marketing assistance; and seller attitudes. Owners who had not made sales were questioned about their contact with the market and their reasons for not marketing timber.

Although the 58 owners reported a total of 78 sales, data were obtained on only 61 sales. Of these, not all questions were answered in each case. Consequently, the number of sales used in the analysis varies with the survey question. The number of sample sales used is noted where appropriate.

Sales characteristics

Sales activity on small woodlands has increased under the stimulus of the dramatic sixfold expansion of lumber production in Mendocino County since 1946. New mills and an increased number of timber buyers supported this growth by drawing heavily upon timber in small ownerships. Thus, of the 126 owners interviewed, 58, or nearly one-half, made a total of 78 separate sales of stumpage or logs in the period from 1950 to early 1957.

Size of holdings. The 78 sales reported were distributed as follows:

| <i>Size class</i> | <i>Per cent of all sales</i> | <i>Per cent of group selling</i> |
|-------------------|----------------------------------|--------------------------------------|
| 0–179 | 44 | 33 |
| 180–699 | 36 | 69 |
| 700–4,999 | 20 | 75 |
| <hr/> | | |
| Total | 100 | |

As the center column shows, four-fifths of the sales were made by owners of properties less than 700 acres in size.

The study revealed (right column, above) that only one-third of the owners in the smallest-size class participated in the sales, but that more than two-thirds of the 180–699 acre class and three-fourths of the largest-size class made sales during the study period.

Type of holdings. As the next table indicates, agricultural interests were the

most active sellers. The findings establish the miscellaneous interests as a group of comparative importance in the marketing picture. Timber interests made only 22 per cent of the sales but half of all owners in this type-class participated in the sales.

| <i>Owner type</i> | <i>Per cent of all sales</i> | <i>Percentage of owners in each class selling timber</i> |
|---------------------|------------------------------|--|
| Miscellaneous | 37 | 38 |
| Timber | 22 | 50 |
| Agriculture | 41 | 88 |
| <hr/> | | |
| Total | 100 | |

Location of residence of the owners had little effect on timber-marketing activity, as shown in the table below. Distance from the property apparently did not effectively interfere with the owners' opportunities to market timber. As will be seen later, these opportunities came mainly as the result of buyer initiative.

| <i>Residence</i> | <i>Per cent of all sales</i> | <i>Percentage of owners in each class selling timber</i> |
|--|------------------------------|--|
| On property | 36 | 48 |
| In the county but not on property | 28 | 52 |
| Outside of county..... | 36 | 46 |
| <hr/> | | |
| Total | 100 | |

Previous marketing experience is an important factor in timber marketing because of the special skills and knowledge required. However, nearly two-thirds of 59 sales studied were made by owners without such experience.

| <i>Previous sale experience</i> | <i>Per cent of sales</i> | <i>Per cent of owners with logging experience</i> |
|----------------------------------|--------------------------|---|
| None | 61 | 17 |
| One previous sale..... | 13 | 39 |
| Two or more previous sales | 26 | |
| <hr/> | | |
| Total | 100 | 24 |

In part, this lack of experience reflects the recent development of the economic importance of much of the forest area, particularly the Douglas-fir type, in the county. With a product marketable only in the last few years, owners have had little previous opportunity or incentive to become familiar with timber selling. Another reason for this inexperience in timber marketing is the fact that, commonly, timber is regarded as an occasional product rather than the main purpose of ownership; woodlands, therefore, receive only a small portion of the owners' time and attention. Thus marketing may readily be regarded in an off-hand manner. This may start a vicious cycle, as inexperience tends to lead to poor marketing practices and hence to low returns from woodland management; which, in turn, leads to even less interest in the woodland possibilities.

Point of sale was usually at the stump. Owners were seldom in a position to harvest the timber themselves. Because harvests were infrequent and cuts small, few owned the necessary equipment and possessed the necessary technical skills. Even if an owner does have the equipment, he may evaluate other uses as more rewarding than logging. Rarely, however, does an owner have equipment, such as a tractor and a truck, heavy enough to handle the size of timber cut in the county.

Another important factor is that other occupational interests limit the time which can be allocated to an occasional timber sale, thus precluding owner logging. These various factors dictate the kind of marketing arrangements that small-woodland owners find practical and convenient. Of the sales studied, 87 per cent were stumpage sales in which the buyer did the cutting; in the remaining 13 per cent logs were sold at the mill. The majority of these log sales were made by owners classed as timber operators.

| <i>Point of sale</i> | <i>Per cent of sales</i> |
|----------------------|--------------------------|
| On the stump..... | 87 |
| Roadside | .. |
| At the mill | 13 |
| Total | 100 |

The prevalence of sales of standing timber emphasizes the important position of the buyer as an agent in the management of these timber stands. Both the marketing and the logging practices of timber buyers in Mendocino County have a major impact on the private, small-forest resource.

Size of sales. The volume of each sale was usually small—about half of the sales totaled 500,000 board feet or less. Analysis of 36 small woodland sales showed harvested volumes ranging from as little as 3,000 board feet to 8 million board feet. Most sales, however, ranged from just under 100,000 up to 900,000 board feet. The average volume sold was 1,133,000 board feet, with one-fourth of the sales exceeding this figure.

| <i>Size of sale—in thousand board feet</i> | <i>Per cent of sales</i> |
|--|--------------------------|
| Less than 500 | 50 |
| 600-900 | 8 |
| More than 1,000..... | 42 |
| Total | 100 |

In spite of the many small sales, gross receipts from the sale of timber were often comparatively large. For some owners income from the sale of standing timber constituted a substantial portion of total annual income. Study of 41 sales showed total gross income was \$2,000 or more in two-thirds of the sales. A third were for total payments of from \$10,000 to \$60,000, while another third were for sums less than \$2,000. These 41 sales averaged \$9.308 per sale, and ranged from \$49.50 to \$60,000 (appendix table 12).

These findings suggest that even though small sales are characteristic of

small woodland properties, receipts from even an occasional timber sale are often sufficiently large to justify the seller spending considerable time on timber marketing and possibly employing outside technical assistance.

Reasons for marketing woodland products often indicate attitudes and interest in management and marketing. The motivation of an owner to sell timber can be expected to influence his marketing practices and arrangements. An owner in need of emergency cash, for example, may be unable to "shop around" for price, and would be inclined to take the first opportunity to sell on a lump-sum basis.

Reasons for selling may be based primarily on financial considerations or on considerations of the woodland itself, such as stand maturity, salvage after fire, or timber damaged by insects or diseases. Of 59 sales studied, financial considerations were found to be principal reasons why owners sold timber, as shown here.

| <i>Primary reason for making sale</i> | <i>Per cent of sales</i> |
|---|--------------------------|
| Addition to regular income..... | 54 |
| Emergency cash needs..... | 14 |
| High current prices | 7 |
| Tax burden..... | 2 |
| Timber mature | 3 |
| Salvage cut | 5 |
| Land clearing | 8 |
| Other | 7 |
| Total | 100 |

The desire for additional income or the need for cash to meet emergency expenses together account for more than two-thirds of all reasons given for marketing timber. Adding high current prices and tax burden, three-quarters of the reasons were based on financial considerations. The tax burden as a single factor, however, was apparently unimportant during the period of this study. Silvicultural considerations of the forest itself were seldom given as reasons for selling.

The need for additional income as a principal motivating factor in small-woodland sales deserves further comment. Timber sales on small forests normally occur at irregular intervals and hence few owners count on them as a regular source of planned income. In fact, most owners did not consider timber as a crop and sold it as a result of an accidental opportunity rather than as a preplanned event. The comment made by several owners that their timber sale was a "windfall" financially reflects this aspect of small-woodland sales. Some owners were unaware they had merchantable timber until they received an offer from a buyer.

Clearing forest land for alternative land uses, principally grazing, was the third most important reason prompting woodland sales. The fact that 8 per cent of the sales in the study were made for this purpose suggests that withdrawal of forest land from timber production is a significant factor affecting the future status of the forest resource.

Proximity to sawmill log markets, a locational advantage of considerable importance, was characteristic of most ownerships. Of 90 properties for which data were obtained, nearly 60 per cent had at least one sawmill within a 5-mile travel distance and at least two mills within 10 miles. Eighty-five per cent had at least one mill within 10 miles. In addition, half the properties enjoyed a further advantage in having two competing mills at just about the same distance away. Nearness to sawmill log markets and an established road system to reach them add considerably to small-woodland timber values.

| <i>Distance in miles to nearest sawmill (average distance 5.8 miles)</i> | <i>Per cent of properties</i> |
|--|-----------------------------------|
| 0-5 | 59 |
| 6-10..... | 26 |
| 11-15..... | 12 |
| 16-20..... | 3 |
| Total | 100 |

| <i>Distance in miles to second nearest sawmill (average distance 10.4 miles)</i> | <i>Per cent of properties</i> |
|--|-----------------------------------|
| 0-5 | 30 |
| 6-10..... | 28 |
| 11-15..... | 20 |
| 16-20..... | 13 |
| 21-25..... | 6 |
| 26-30..... | 2 |
| 31-35..... | 1 |
| Total | 100 |

Very often the forest owner or timber buyer chose to bypass the nearest mill or mills to sell the logs elsewhere. In nearly one-half the sales analyzed logs were transported to mills beyond the nearest mill. In a third of the sales, the logs were hauled to mills beyond the second nearest mill.

| <i>Location of mill receiving logs</i> | <i>Per cent of sales</i> |
|--|--------------------------|
| Nearest mill | 55 |
| Second nearest mill | 14 |
| A mill further away | 31 |
| Total | 100 |

Market organization. As standing timber is the product commonly sold by small owners, most sellers dealt with independent operators who in turn sold the logs at a local mill. Thus of 35 timber sales for which such information was obtained, two-thirds were made to independent operators. In the remaining sales owners dealt with a mill operator who also conducted logging operations or else contracted to have the logging done by an independent operator. In two-thirds of the sales to mill operators the purchasing mill had a production of less than 15 million board feet annually.

Marketing practices

The structure of woodland marketing in Mendocino County may be described as disorganized. Sales practices vary widely and market transactions occur at scattered locations under dissimilar circumstances. Products vary in quality and quantity and are frequently measured by different methods. Tracts of

timber vary in value, depending on location, character, and ease of logging. General impressions as to price levels are fairly common among sellers, but detailed knowledge of comparable sales useful for adjusting average prices to reflect value of individual timber stands is practically nonexistent. Buyers often treat each purchase as an isolated case, with the objective of negotiating the sale for the lowest price. All these factors work against the establishment of common sale methods and of meaningful and generally known market prices.

Another feature is the small-woodland owner's general unfamiliarity with marketing methods and his lack of contact with timber buyers. Also, ordinarily only a single buyer, or at the most two or possibly three, is interested in any one owner's timber at a particular time. Timber is usually sold after negotiating with only one buyer.

Most timber sales are initiated by the buyer. Through him the market forces of supply and demand are transmitted to woodland owners. The owner, as a seller, is essentially a passive marketing agent whose fortunes are inordinately connected with the opportunities offered by the buyer.

The selection of buyers was principally determined by the extent and nature of the woodland owner's market contacts and by a variety of nonmonetary considerations. Prominent among these was an existing personal relationship between buyer and seller. The distribution of 53 woodland stumpage sales was as follows:

| <i>Reason for selecting the buyer</i> | <i>Per cent of sales</i> |
|---|--------------------------|
| Personal friendship | 28 |
| Only buyer known | 26 |
| Best offer (money and services) ... | 23 |
| Good reputation | 11 |
| Would pay seller's price..... | 6 |
| Highest bidder | .. |
| Other | 6 |
| Total | 100 |

Personal friendship, the most frequently given reason for selecting the buyer, reflects the seller's desire to deal with a buyer in whom he has confidence. Although "selection" infers alternative choices, many sellers who gave personal friendship as the reason for choosing a particular buyer actually knew only the one buyer. In fact, in another one-fourth of the sales owners indicated that the buyer *was* the "only buyer known." Taken together, nonmonetary factors including personal friendship, only buyer known, good reputation of the buyer, and other reasons, determined buyer selection in 71 per cent of the sales. These findings indicate that small-woodland owners commonly made sales under conditions of limited market contact.

Reliance on factors other than price can of course be highly desirable in woodland marketing. The sale of standing timber involves much more than a simple exchange of a commodity. Instead, the buyer enters the property of the seller and carries out the logging operations. The effect of the logging on the residual stand and the balance of the property and the accuracy of scaling procedures can have a great impact on the net benefits of the sale to the landowner. Selection of a competent, cooperative, and reliable buyer is thus of the greatest importance. However, the nonmonetary reasons for buyer selection in Mendocino County commonly reflect more or less accidental considerations rather than thorough appraisal of buyer qualifications.

Although use of competitive bidding would presumably raise the purchase price, there was a conspicuous absence of such bidding as the basis for buyer selection during the period of study. Again, this is an important indicator of owner attitudes toward timber. The effective use of competitive bidding requires careful advance preparation of the sale. Obtaining bids from several buyers requires the expenditure of time and

money. Information on the size of the sale area and on the volume, species, and condition of the timber to be sold must be collected and bids invited through advertising or personal contact. Prospective bidders must be shown the sale area, and bids must be received. Furthermore, provision for adequate supervision of the sale becomes of great importance, since the buyer is selected solely on price considerations. In short, competitive bidding requires more time and effort on the part of the seller than most small-woodland owners have been willing to devote to marketing.

The practice of selecting the buyer on the basis of "best offer, money and services," which also represented nearly one-fourth of the sales, may be considered a partial substitute for competitive bidding. Selection on best offer, as distinguished from bidding, meant receiving a number of unsolicited offers to buy over a period of time. The offer was often composed of two parts: price and services, which include road building, road repair or maintenance, installation of culverts, ditching, grading, and slash disposal. Some sellers were as interested in having a road built as a part of the transaction as they were in the timber sale, taking a lower price in exchange for this service. For others price alone was the main concern. Rarely were more than three offers received. Often they occurred over time periods sufficiently long that changing market conditions invalidated comparing one price offer with another.

Methods of determining price assume especial importance in a market characterized by lack of competitive bidding and wide variations in the conditions surrounding particular sales. Several factors tended to establish pricing methods: lack of price knowledge among sellers; passiveness of sellers as marketing agents; and the dominant market position of timber buyers, who have a clearer idea of timber values.

The table below illustrates the relative importance of price-determining methods reported in 55 timber sales:

| <i>Method of price determination</i> | <i>Per cent of sales</i> |
|---|--------------------------|
| Buyer's offer | 44 |
| (offer of one buyer) | (20) |
| (highest offer, money and services) | (24) |
| Negotiated price | 32 |
| Seller's asking price..... | 22 |
| Other | 2 |
| Total | 100 |

In the absence of competitive bidding, negotiation with the buyer was probably the seller's most effective means of obtaining fair market price for his timber. Price determination by negotiation, accounting for one-third of all sales, involved bargaining between buyer and seller. To arrive at fair market price, both buyer and seller should be in full possession of all facts pertinent to the sale. Thus the actual price finally agreed upon may hinge on how little or how much the woodland owner knows about the product and market.

Timber-sale contracts written by either the buyer or seller were used in two-thirds of all sales in the survey, with oral sale agreements comprising most of the remainder. One-half the written contracts were provided by the seller and the remaining half by the buyer.

A timber-sale contract is an important feature of a stumpage sale. As a legal instrument, it establishes the rights, liabilities, and performance requirements of both buyer and seller. Such a contract can also be a tool in forest management, as specific provisions can be made covering method of logging, fire prevention, selection of trees to be cut, and slash disposal. However, experience in the county shows that a written contract provides little or no protection to the seller unless it is prepared with adequate knowledge of legal and forestry considerations and unless there is effective supervision of the sale.

The legal and physical aspects of marketing timber apparently were casually regarded by most sellers. Few were familiar with timber contracts. Still fewer sought legal counsel or professional forestry advice. Examination of 200 timber-sale contracts recorded in the Mendocino County Courthouse revealed that most contracts simply stated the price, method of payment (lump sum or scale), location of the property, and the kind of timber to be sold (for example, "all merchantable redwood"). These contracts are best characterized by what they failed to include. Important sale aspects not covered in most timber-sale contracts included the following:

Definition of timber to be cut and utilization standards.

Scaling method to be used.

Time limit for removal of purchased timber.

Liability for taxes between time of purchase and time of cutting.

Time at which title to the timber passes from the seller to the buyer.

Assignability of the contract.

Liability for loss in event of fire or other catastrophe.

Responsibility for slash disposal.

Financial loss and dissatisfaction with timber buyers and timber growing often results from poorly written sale contracts. In one-fourth of the sales with written contracts owners felt the buyer had not complied with their agreement. A third felt the logger had done a poor job. Often contract provisions actually did not cover the item the seller felt the buyer had not complied with. One owner, perturbed over slash disposal, said: "No, it wasn't in the contract, but we talked about it and I thought he was going to take care of it." Complaints over buyer nonperformance included the following:

Failure of the buyer to clean up the slash.

Failure to provide scale tickets in support of payments.

Too heavy cutting of the stand.

Failure to build a road agreed upon.

High-grading of the stand.

Two case examples serve to illustrate the difficulties that sometimes arise from poorly written contracts. One owner agreed to a buyer's contract in which he sold 2.5 million board feet of Douglas-fir and pine timber for a lump-sum payment based on the buyer's cruise. The sale was made in 1951 for an average price of \$3.19 per thousand board feet. According to contract the buyer had a 10-year period in which to cut the timber, but verbally told the seller the timber would be cut in a year. Six years later the timber had not yet been cut. In the interval prices had tripled and the contract had been resold twice. Assignment required the seller's written permission, which had been obtained both times under the guise of a "release for logging" that the owner thought was necessary before logging could begin. Thinking the timber would be cut immediately, the owner had also agreed to pay the taxes. There was no provision in the contract for payment for additional tree growth over the six year period. At the time of interviewing this owner was deeply disturbed over the possibility he was "being cheated," heatedly stating that "not a stick of timber is going to be cut off this place until I get what's coming to me."

In another case, a successful businessman used a contract written by his lawyer for a \$20,000 lump-sum sale involving 17 million feet of fir and pine timber. Sale volume was based on the buyer's "casual observation," and price averaged \$1.17 per thousand feet in a year when stumpage prices in the county averaged several times higher. The seller made concessions in the selling price in exchange for the construction of a road, but this part of the contract was not

soundly written. The buyer did not construct the road, and the seller at the time of the survey was in court for the second time over nonperformance.

In the majority of sales involving either verbal or written contracts, owners felt the buyer had complied with the agreement. But 40 per cent of all sellers were dissatisfied with the logging, feeling the buyer had done a "poor job." Some said they would "never sell again." A frequent complaint was that too much damage had been done to the residual stand and to the land. Alleged failure of the buyer to fulfill his contractual obligations was most frequent in cases where the seller had written the contract. This reflects provisions in seller contracts that the buyer is likely to find burdensome. It also suggests that there is a gap between what owners want done on their timberland and what timber buyers are willing to do, and probably that some owners do not clearly understand the results of even good logging. Oral contracts and most buyer contracts offer wide latitude as to logging methods.

Many of these difficulties arose from the failure of owners to administer the sale adequately after an agreement had been made. Some owners never saw their property either during or after the sale. At best only infrequent checking was made by others, while some did not inspect the sale area until after logging was completed and the buyer had moved to another location.

Sales payments. Most contracts specified the method of payment for standing timber. In two-thirds of 55 stumpage sales studied, payment was based on determination of the volume in the harvested logs (scaling), usually by either the buyer or by the mill to which the buyer in turn sold the logs. The basis of payment was distributed as follows:

| <i>Basis for payment</i> | <i>Per cent of sales</i> |
|--------------------------|--------------------------|
| <i>Scaling</i> | |
| Buyer's scale | 39 |
| Mill's scale | 17 |

| | |
|---------------------------------|-----|
| Buyer's and mill's scale..... | 5 |
| Seller's scale | 4 |
| Buyer's and seller's scale..... | 2 |
| Seller's and mill's scale..... | 2 |
| <hr/> | |
| Sub-Total | 69 |
| <i>Lump sum</i> | |
| Buyer's cruise | 9 |
| Seller's cruise | 5 |
| Joint cruise | 2 |
| Buyer's estimate | 7 |
| Seller's estimate | 4 |
| No volume determination..... | 2 |
| Other | 2 |
| <hr/> | |
| Sub-Total | 31 |
| <hr/> | |
| Total | 100 |

The practice of scaling is well established throughout the logging and marketing system. Timber owners prefer scaling, believing that it provides a measurement of the quantity of timber actually taken by the buyer. Local mills purchase the logs from timber operators on the basis of scaled volume, frequently also providing the landowner with copies of the scale tickets covering logs harvested from his property. Logging crews are also commonly paid on the basis of output as determined by scaled volumes.

In selling standing timber by log scale, payment is based on a stumpage price per thousand board feet and the scale of the logs as they are removed from the property. The buyer may make payments bi-weekly or monthly as the timber is removed, using scale tickets from the mill receiving the logs or his own statement of the scaled volume as evidence of the amounts taken. Although most mills recognize differences in log quality (grade) and pay accordingly, in four-fifths of the timber sales on a log-scale basis a single price was set for all logs. In the establishment of this price, recognition may be given to the grade of logs which the property will yield; the method is a widely accepted marketing practice.

Payment on a log-scale basis involved various difficulties. A common complaint among sellers was that the buyer failed to support payments with scale tickets

establishing the volume of timber cut and removed. Others complained that the buyer hauled logs to two different mills, but submitted only the scale tickets and payment for logs taken to one. Participation by the seller in the scaling is obviously desirable to protect his interests, but with limited volumes and intermittent operations the costs of scaling to the seller may become disproportionately high. This combined with lack of knowledge of scaling practices appears to explain the fact that less than one-eighth of the owners selling on a scale basis were represented in the scaling. Payment on a scale basis also encourages the high-grading of stands and the leaving of marginal and low-quality logs on the ground unless the sales specifications are carefully drawn in the contract and adequate supervision of the sale is provided.

A less obvious difficulty with sales on a log-scale basis results from the question of the scaling practice followed. All sales studied were scaled by either Spaulding rule or Scribner rule, with 82 per cent using Spaulding, and 18 per cent Scribner. These two rules are mutually consistent, so the problem of different log rules found in some other areas of the United States does not appear important here. However, the practices under which these rules are applied are very important. In Mendocino County loggers prefer to handle long logs to reduce costs per thousand. These long logs of 32 and 40 feet in length may be scaled either on a long-log basis, with scaling as a single log based on the diameter of the small end and with no allowance for taper, or on a short-log basis, with scaling of two or three sections of the log and recognition of the effect of taper on the scaling diameters of these sections. As shown in figure 5, for 40-foot logs long-log scaling by either Spaulding or Scribner will give volumes at least 10 per cent less than short-log scaling, while for logs in the smaller range of top diameters such as

are cut from younger timber the difference may amount to 25 per cent or more. Moreover, although log lengths provide a particularly striking example of the effects of scaling procedures, they are only one of a number of variables in scaling practice which can have an appreciable effect on the total log scale reported. Yet none of the owners interviewed in the study seemed concerned about log length and similar problems in scaling; in fact, about a third knew nothing about the method used in determining log scale. The scaling procedures to be followed were rarely covered by the sale contracts, generally following the customary practices of the buyer. There is considerable variation in the scaling practices of different buyers in the county.

Lump-sum payments based on some type of estimate of the total volume of standing timber in the sale were also common, representing one-third of the sales made (see text table on page 34). In half of these lump-sum sales the volume was estimated by a cruise involving the tallying of timber volumes on sample areas, while in the remaining half reliance was placed on rough ocular estimates or similar approximations. Pay-

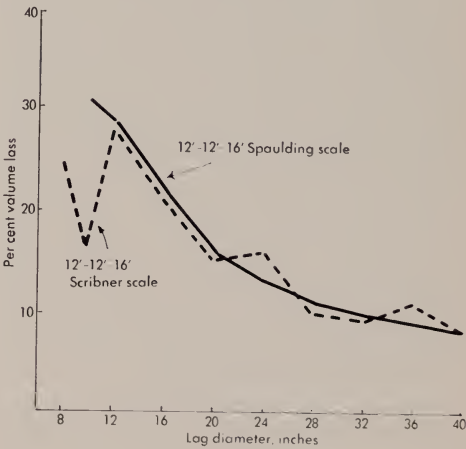


Fig. 5. Per cent of 40-foot log scale lost if log is scaled as a single log instead of as multiple logs (taper 1" per 8').

ments were made either as cash in advance or at specified intervals. Most such sales leave a high degree of uncertainty as to the volume of timber actually removed, and the prices per thousand quoted by the owners are of questionable meaning.

Lump-sum sales based on inadequate knowledge of timber volumes are obviously subject to abuse, and the method has sometimes been held to be unsound. However, a lump-sum sale based on a careful tally or cruise of marked timber and subject to adequate contract provisions and supervision can be an effective method of selling timber. This is especially the case for small or intermittent sales in which the volume handled does not warrant the cost of supervision of scaling by the seller. In addition, some owners favored lump-sum sales because they preferred to be paid before the timber was cut.

Timber-cutting practices in Mendocino County are broadly governed by the Forest Practice Rules, which set up minimum acceptable practices to keep timberland in productive condition. The western part of the county comes under the rules of the Redwood Forest District (California Division of Forestry, 1953), while the balance of the county is in the Coast Range Pine and Fir Forest District (California Division of Forestry, 1953). The forest-practice rules were developed by a committee of forest-land owners and operators after public hearings in each district, were approved by the votes of more than two-thirds of the private timberland ownerships in each district, and were given force of law by action of the California State Board of Forestry in 1947. In 1953 the original rules were amended and strengthened.

Rules for the Redwood Forest District specify that in old-growth timber stands not less than 40 reserved seed trees, 24 inches or more d.b.h., shall be left standing within each 10 acres of cutover land.

The rules also provide that in lieu of these requirements, not less than 80 reserved seed trees, 18 inches or more d.b.h., shall be left standing within each 10 acres of cutover land. The latter specification also applies to young-growth timber stands.

Rules for the Coast Range Pine and Fir Forest District provide that areas of pine or of mixed coniferous timber shall have reserved all thrifty sound trees 20 inches d.b.h. or less, with a minimum of two seed trees to be left per acre and no area to be more than one-eighth of a mile from seed source. The same diameter limit applies in areas of pure Douglas-fir, with the addition that not less than 80 Douglas-fir trees over 16 inches will be left on every 10 acres of harvested land.

In addition to the above specifications, rules for both districts establish minimum practices of logging, hazard reduction, fire suppression, and forest-insect and disease protection.

Timber-cutting practices were not ordinarily defined in sale agreements, except in general terms. Therefore, in most sales the forest-practice rules constituted the only written provisions governing cutting practices that were of legal stature. As commonly used, both written and oral sale agreements usually stated simply that the buyer was entitled to "all merchantable timber" above a certain minimum diameter. Within these rather broad limitations the buyer selected the timber he wished to cut, and usually removed all currently merchantable timber.

In this study, the basis for cutting in 57 timber sales was distributed as follows:

| <i>Basis for cutting</i> | <i>Per cent of sales</i> |
|---------------------------|--------------------------|
| Buyer's choice of | |
| merchantable timber | 49 |
| Diameter limit | 26 |
| Clear cut | 17 |
| Marked timber | 3 |
| Other | 5 |
| Total | 100 |

The type of cutting was distributed in the following manner (based on 58 sales) :

| Type of cutting | Per cent of sales |
|---|-------------------|
| All merchantable trees..... | 57 |
| Clear cut | 17 |
| Heavy partial cut (more than 40 per cent of merchantable volume)... | 12 |
| Light partial cut (less than 40 per cent merchantable volume)..... | 7 |
| Re-log or salvage..... | 7 |
| Total | 100 |

Thus, timber was marked for cutting according to particular management objectives or silvicultural needs of the forest in only 3 per cent of the sales. Heavy cutting, ranging from more than 40 per cent of the merchantable volume to all merchantable volume, characterized over two-thirds of the sales, and in an additional 17 per cent the forest was clear cut.

A primary reason for the heavy cutting in woodland sales is the preference of timber operators, who favor heavy cutting so that fixed operating costs can be spread over as large a volume as possible. This preference is often shared by timber owners who desire the maximum sale income, frequently regardless of their financial position, and by owners whose management objective is conversion. The interest of the former in the possibility of increasing forest returns over longer time periods through more conservative cutting practices is sharply limited by their preference for current income. In addition, many owners who are unfamiliar with timber growing and selling are simply unaware that cutting alternatives other than those usually offered even exist. Custom is apparently a strong factor in determining timber-cutting practices.

Although this study did not attempt to evaluate the effect of customary cutting practices on future small-woodland productivity, observation during field interviews indicated that the common method

of diameter-limit cutting has resulted in fair stocking of residual trees on most properties. This is due more to initial-stand structure than to conscious efforts by timber operators and land owners, as the stands are generally uneven aged. Careless logging, rather than type of cutting, appears to be the major problem. Often trees which are not cut are badly damaged or knocked over by falling timber or heavy machinery. Some owners are unaware of these problems, others don't care. But of the owners interviewed during the study many were distressed over the destruction of residual stands.

Technical assistance. In forest management and marketing matters assistance is available to the woodland owner in Mendocino County from several public and private sources. The County Farm Advisor in Ukiah provides information and advice for farmers and other rural landowners upon request and has various publications concerning forestry and timber marketing. A service forester from the California Division of Forestry is available. During most of the period of this study Mendocino County was covered by a service forester from Santa Rosa, in Sonoma County, but since 1957 there has been a service forester stationed at Willits. The service forester provides on-the-ground advice or assistance concerning forest management, including timber marketing. This marketing assistance covers such matters as volume determination, marking timber, finding and selecting a buyer, price information, contractual arrangements, and administering the sale. The function of the service forester is to develop the owner's interest in forest management, advise and assist him in initiating management practices, supply needed information, and encourage him to follow good forest practice. The direct conduct of these activities is carried out by the owner, not by the service forester.

Private consulting foresters who may

be retained on a fee basis to handle forest management activities for the timber owner are available. Consultants offer a full range of technical services, including forest inventory, management planning, and sale administration. Many such consulting foresters have had wide experience in timber marketing and are highly qualified to carry out the entire sales operation for the owner.

Although this professional assistance in timber marketing is available and small-woodland owners in the county often lack such experience, and despite the fact that receipts from many sales are sufficiently large to justify employing outside technical assistance, the owners in 73 per cent of the sales covered by this study reported they had no marketing assistance. The remaining sales were about equally divided among owners receiving assistance from one of three sources: (a) private timber cruisers, particularly for information on timber volumes—10 per cent; (b) the service forestry program—7 per cent;⁶ and (c) neighbors, friends, and relatives, particularly for information regarding prices and buyers—10 per cent. None of the owners whose gross sale receipts were less than \$2,000 employed outside assistance. Of those sellers whose receipts exceeded \$2,000, one-fourth had assistance.

A chief reason why technical marketing assistance is not sought in spite of an apparent need is that many owners are unaware that such agencies exist. This was especially common among absentee owners and those whose occupational interests were not closely associated with timber ownership.

⁶ California Division of Forestry records showed that 14 owners who did not report assistance had been contacted by division personnel, in several cases in connection with minimum-diameter cutting permits. Of these 14, three were contacted after the timber sale was made, 10 during the sale year (it could not be determined if the contact was before or after the sale), and one before the sale year.

Variations in sales practices

Since land is held in different types and sizes of ownerships and for various purposes, attitudes and interests regarding forest land vary from one group of owners to another. For the same reasons the marketing practices of each group will vary from others and from the general pattern described above.

The marketing practices of particular groups are summarized here in terms of their differences from the general small-woodland marketing system. Emphasis is placed on type of ownership, as this classification is easily recognizable and because variations in marketing practices were more pronounced than in the size of ownership or residency groupings. However, both size of ownership and residency are considered.

Variations among types of owners. *Timber interests* as a special ownership group include timber operators and timber holders. The former carry on commercial timber operations as a major business, the latter hold timber either for commercial operations conducted by themselves or for sale to others. Fifty-five

Compared with all owners, timber interests more frequently:

Harvest their own timber and sell the logs at the mill

Select buyers on the basis of price considerations

Determine selling price by negotiation or their own asking price

Sell on scale

Control selection of trees to be cut by marking or other means

Consider logging good to satisfactory

Feel the buyer had complied with the contract

Receive outside technical assistance (usually timber cruising)

per cent of the timber interests had previous sales experience, compared to 36 per cent of all other owners. The number of sales made by timber interests averaged 2.5 per owner, contrasted to 1.5 for agricultural interests and 0.5 for miscellaneous interests (see definitions of the various owner types on page 10).

As noted, the small-forest land owner generally markets stumpage rather than logs. This is true almost without exception for owners with agricultural and miscellaneous interests, who marketed stumpage in about 96 per cent of their sales. Timber interests, however, sold logs at the mill about as frequently as they sold standing timber. Typically, the owners selling logs performed the logging with their own equipment; with one exception, their primary occupation was timber operations of various kinds.

Timber interests rather consistently depart from the general marketing system, usually towards more advantageous sale arrangements. Contrasted with other types of owners, they are more familiar with existing markets, potential buyers, and prices being paid for forest products. Their knowledge of timber and of marketing methods distinguishes their bargaining position from that of other small-woodland owners. As a result, owners with timber interests felt they were more successful in completing satisfactory timber sales than were other owners.

Agricultural interests as a group include livestock ranchers (corporate and individuals) and farmers (fruit, poultry, dairy, cultivated crops, etc.). Much land held by agricultural interests is well suited to growing timber. In some ownerships commercial timberland forms a substantial portion of the total acreage and timber is an important, but secondary, enterprise. Usually, however, timber holdings receive little special attention except to the extent that they are used

for grazing by livestock (Poli and Baker, 1953).

The marketing practices of agricultural interests conform to the general pattern, except that they more frequently:

Receive their asking price when selling timber

Sell on scale

Market timber without outside technical assistance

Agricultural interests figured prominently as sellers in the foregoing analysis, accounting for more sales (41 per cent) than any other owner type. As would be expected then, the marketing practices of agricultural interests do not appreciably differ from the general marketing system already described. An exception worth noting, however, is that a larger proportion of agricultural interests had previous sales than did all owners. Agricultural interests matched timber owners in extent of experience—54 per cent as compared to 55 per cent—but not in degree of experience per owner. The secondary role of timber in agricultural ownerships coupled with the owners' slight familiarity with timber and marketing places them below timber owners in terms of bargaining position.

Miscellaneous interests include persons holding land for recreation, for residence, or for various other purposes that cannot be properly classified as timber or agricultural. The ownerships are typically very small, generally from 80 to 100 acres. Nearly two-thirds of the owners live outside the county, while three-quarters live away from their property. Timber operations are infrequent, and commonly remove all merchantable timber at the time of cutting. Some owners have withdrawn their land from timber operations because cutting would conflict with other land uses.

Nearly 40 per cent of the owners in this group sold timber, accounting for 42 per cent of the sales analyzed. With few exceptions their marketing practices are poorer than the general pattern. Being unfamiliar with either timber or marketing, owners tended to practice disadvantageous methods and often were unhappy with the results. Sales usually were made without knowledge of current prices and resulted from a single buyer's offer. Some owners in the miscellaneous-interest group felt their timber sale was a "windfall" financially, never having been aware of the possibility of commercial timber cutting. Nonresident owners were troubled over the problems of getting full payment for timber harvested and of obtaining satisfactory logging.

In marketing their timber, miscellaneous-interest owners often use disadvantageous methods.

Compared to all owners, these small nonresident owners more frequently:

Select the buyer on the basis of nonprice considerations

Accept the buyer's offer in setting the selling price

Sell timber on a lump-sum basis

Agree to "buyer's choice" in selection of trees to be cut

Are dissatisfied with the logging aspects of their sale

Do not have previous sales experience

Agree to contracts provided by the buyer

Variations among sizes of ownerships. To a large degree variations in sales practices among owners of different-size ownerships reflect the type of owners that compose each size class. Thus, agricultural interests constitute 83 per cent of the owners holding from 700 to 5,000 acres, while miscellaneous-type owners account for 66 per cent of the holdings of less than 180 acres.

Owners of less than 180 acres frequently:

Select the buyer on the basis of non-price considerations

Accept the buyer's offer in setting the selling price

Sell timber for lump sum payments

Agree to "buyer's choice" of harvestable trees

◇ ◇ ◇

Owners of 180 to 700 acres frequently:

Select the buyer on the basis of price considerations

Negotiate with the buyer when determining the sales price

Sell on scale

Receive outside technical assistance

◇ ◇ ◇

Owners of 700 to 5,000 acres frequently:

Know what their timber is worth and receive their asking price

Sell on scale

Control the selection of trees to be cut

Approximately the same proportion of owners in each size range had previous sales experience.

Variations by owner's place of residence. Disadvantageous marketing practices were particularly apparent among nonresident owners, who were more likely to lack knowledge of timber and of marketing than resident owners. Also, because they lived away from their property, these owners found it difficult to check the buyer's operations and to attend to other important sale details.

Since residency is closely related to type of ownership, the variations in marketing practices reflected this relationship. Agricultural interests usually reside on their property, or have a manager who does. Thus they are better informed of marketing matters than are owners in

the miscellaneous-type group, who commonly live outside the county. Timber interests are very nearly equally distributed by place of residence.

- Nonresident owners living outside the county more frequently:

Accept the buyer's price offer

Agree to contracts provided by the buyer

Sell for lump-sum payment

Lack experience in selling timber

Receive outside technical assistance, usually in cruising timber

◇ ◇ ◇

Owners living on the property or within the county more frequently:

Select buyers who are personal acquaintances or who are considered reputable by others

Receive their asking price for the timber

Sell on verbal agreements as to the terms of the sale

Sell on scale

In general, resident owners seem to be more casual about their timber-sale arrangements than are other owners. This probably is due to their greater familiarity with the local marketing scene and with timber buyers, with whom they frequently are acquainted. As a result resident owners tend to sell timber on terms established in a "gentlemen's agreement."

Nonresident owners sought outside technical assistance more often than other owners. However, the principal kind of assistance was in timber cruising, and none of the owners hired a person to oversee the timber sale.

Prices and price-determining factors

Because marketing practices range widely, and timber varies in quantity, quality, and location, the prices received

by owners were highly variable. Here is the average price and the range in prices for Douglas-fir stumpage for 36 small-woodland sample sales:

| <i>Year</i> | <i>Average price</i> | <i>Range in prices</i> |
|-------------|--------------------------|------------------------|
| | <i>(dollars per MBM)</i> | |
| 1952..... | 5..... | 3-10 |
| 1953..... | 5..... | 3-6 |
| 1954..... | 10..... | 6-18 |
| 1955..... | 8..... | 3-10 |
| 1956..... | 10..... | 6-15 |

The variability in prices is denoted by the fact that in any one year the highest price was from two to more than three times the lowest price. The trend of the prices is upward, with the average price in 1956 double that in 1952. Clearly, woodland owners have enjoyed larger returns from timber marketing as a result of increasing lumber production and the consequent greater demand for logs.

Contracts recorded in the County Courthouse provided price data on an additional 125 private timber sales made in the period 1950 to 1956. These data are shown in figure 6, and establish a price level and trend similar to that shown above for both redwood and Douglas-fir. In most sales, the two species are differentiated for payment purposes, with redwood commanding a price averaging \$1 to \$2 more than Douglas-fir. For both species taken together, the range in prices was from 2 to 20 times the lowest price.

From the nature of these data it is not possible to make a meaningful analysis of the effects of particular marketing practices on the prices received by woodland owners. Prices per thousand for log-scale sales are affected by the scaling practices followed; prices per thousand from lump-sum sales are of doubtful meaning since the volumes involved are uncertain; and in some cases services, such as road building, were included. Moreover, timber prices are strongly affected by size, quality, volume, and accessibility of the timber as well as by the marketing practices used. An attempted

analysis did show gross correlations between price and such factors as seller experience, use of technical assistance, means of selecting buyer, and basis for and type of cutting. While the price differences were generally in the direction which would be anticipated, the limitations of the data made it impossible to establish the statistical significance of any of these differences.

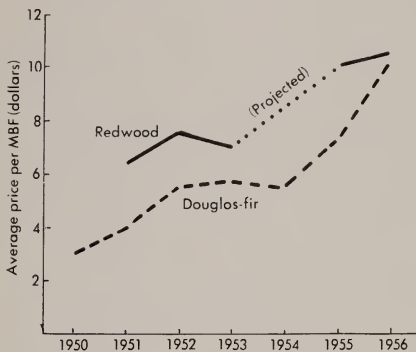


Fig. 6. Average reported prices for private stumpage, Mendocino County (based on 125 transactions).

Why woodland owners won't sell

Only about half the owners surveyed had sold timber during the study period. The remaining 46 nonsale owners, over three-fourth of whom were in the miscellaneous-interest group with less than 180 acres, were asked about their opportunities or efforts to market timber, and why they did not sell. Here are the answers to the last question:

| <i>Reasons for not selling</i> | <i>Per cent of owners</i> |
|--|---------------------------|
| Believes cutting would conflict with other land uses | 64 |
| Management plans call for deferral of cutting | 13 |
| Present prices too low | 6 |
| Intend to sell soon | 6 |
| Other reasons | 11 |
| Total | 100 |

The results show that the majority of owners failed to sell timber by choice rather than for lack of a chance to do so. Nearly 60 per cent of the owners received

at least one offer in the period 1951-1956. A substantial number—31 per cent—had received three or more offers to buy from timber or mill operators during this period.

This resistance to marketing opportunities resulted primarily from the belief of the owners that cutting timber would conflict with other land uses of greater value. About two-thirds of the owners gave this reason for withholding timber from sale. Characteristically, their ownership interests were residential or recreational. Basic to the attitude that cutting would occasion loss of other values was the belief that damage and debris would result. Typical responses were those of the owner who indicated that he did not want to sell any timber because of "the mess that would result," and of another who said that "logging would ruin the place."

Of those owners who had not received offers to buy, 21 out of 23 had made no effort to sell. Some had no merchantable timber, but most were not interested in selling timber because they felt cutting would conflict with other land uses. One owner had contacted a local mill and intended to sell soon. Another owner said he had offered his timber to a buyer logging an adjacent property. The buyer refused to buy the timber, then trespassed and cut the timber without paying for it.

The important conclusion to be drawn from this situation is that about two-thirds of the nonsale owners had in effect withdrawn their timber land from possible commercial timber production. These owners represent about one-fourth of all owners included in the survey sample, holding less than one-fourth of the total area. Their withdrawal was based on the belief that timber cutting was incompatible with residential or recreational uses, even though these activities normally utilize only a small portion of the property.

Home use of woodland products

The small woodland has been a traditional source of various kinds of wood products used by rural owners around the home or farm. This use has lessened in modern times as technology and economic growth made more desirable substitutes available. Wire has replaced the rail fence, lumber the rough hewn pole, and oil or gas heaters the old wood stove.

The cutting of forest products for home use was common practice in the county, but only small amounts were utilized. Of the owners studied, 40 per cent reported using their woodland for fuelwood, fence posts, lumber, poles, or split products. Home use was more prevalent among resident landowners than others.

Fuelwood was the usual product cut for home use. About a third of the owners (including more than half of those living on their properties) reported they cut some fuelwood each year. In order of their importance, oak, pine, fir and madrone constituted the major portion of the volume consumed. Annual fuelwood use by 47 woodland owners totaled an estimated 424 cords per year, or about 9 cords per owner per year.

The second-most frequent product cut for home use was fence posts. Twelve per cent of the owners, most of whom were farmers and ranchers, reported they cut posts at irregular intervals in quantities ranging from 50 to 2,000 posts. Redwood was the principal species utilized for fencing, but about 20 per cent of the total was oak.

Fuelwood was the only product regularly cut. Occasionally lumber and poles are needed for construction of homes, barns, sheds, etc., and when the need arises the required amount may be obtained from the woodland. In instances where lumber is needed, the owner usually supplies logs to a local mill under a contract sawing arrangement, the owner providing transportation of logs to and lumber from the mill.

Purchasing procedures of timber buyers

Considering the manner in which small-forest timber is marketed, the role played by timber operators in the marketing process is obviously important. The buyers play the critical role of assembling timber from numerous small holdings that might not otherwise reach the market. Characteristically, during recent years in Mendocino County, the buyer has sought a seller rather than the reverse.

Since there is no organized market through which to locate owners who have saleable timber and who are willing to sell it, the buyer becomes a "prospector" searching out potential sellers through various "hit or miss" procedures. Although methods vary, the most common practice is simply searching a given area for merchantable timber, identifying the owner through local inquiry or examination of the tax rolls, and then making an offer to buy the timber. The buyer has little way of knowing in advance whether or not the timber owner is interested in selling. Occasionally the buyer learns of an owner interested in selling timber through a mutual friend or neighbor. Often the contact is made through a personal acquaintance with the owner. Some operators have pinpointed merchantable stands by flying over forested areas, while others have used U. S. Forest Service forest survey maps. Once a sale in a particular locality is completed and the logging started, the operator frequently contacts the owners of adjacent or nearby forest properties with offers to purchase their timber "while he is operating in the area." Some owners gave this situation as the reason for selling their timber and for selecting the buyer, feeling that they were taking advantage of an opportunity they might not have later on. Lack of markets during earlier years may partly account for this attitude.

An obvious consequence of this situa-

tion is that the opportunities of woodland owners to market timber are largely determined by the activity of timber buyers. In general, owners sit on the sidelines, passive participants in the events that finally bring their timber into the

market. Presumably, then, the increased sales from small ownerships in Mendocino County in recent years were due not so much to the attractiveness of high prices as to the activity of buyers in quest of more timber.

ACKNOWLEDGMENTS

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We wish to thank the U. S. Forest Service, Pacific Southwest (formerly California) Forest and Range Experiment Station, for use of forest-inventory information and data as a sampling base for the study, and for a grant in support of a special ownership study which is condensed as a portion of this report.

Thanks also to the Agricultural Research Service and Adon Poli for the use of the 1948 ownership data, without which a comparison and analysis of ownership changes would have been impossible, and for his frequently solicited consultation.

The tedious task of collecting ownership sample data was made pleasant by the helpful cooperation of the Mendocino County Assessor, W. L. Brown, his Deputy, Mrs. A. Phillips, and staff, and the Tax Collector, W. T. Clow, and his staff.

Without the help of forest owners and their answers to our many questions there could be no study of forest marketing practices in Mendocino County. Their cooperation is gratefully acknowledged.

APPENDIX

**Appendix Table 1. Commodity Production of Forest Products,
Mendocino County, 1947-1956**

| Year | Number of registrants | Saw logs and veneer logs | Pulpwood | Split products | Piling and poles | Total |
|------------|-----------------------|--------------------------|-----------------|-----------------|------------------|-----------------|
| | | Million bd. ft. | Million bd. ft. | Million bd. ft. | Thousand pieces | Million bd. ft. |
| 1947 | ... | 209 | ... | 1 | .. | 210 |
| 1948 | 69 | 315 | ... | 1 | 1 | 316 |
| 1949 | 81 | 356 | ... | 8 | 1 | 364 |
| 1950 | 130 | 484 | 24 | 2 | 1 | 510 |
| 1951 | 139 | 689 | 57 | 6 | 6 | 753 |
| 1952 | 172 | 727 | 74 | 3 | 6 | 805 |
| 1953 | 220 | 886 | 41 | .. | 3 | 927 |
| 1954 | 263 | 958 | 29 | 6 | 3 | 994 |
| 1955 | 273 | 998 | 23 | 8 | 9 | 1,030 |
| 1956 | 277 | 968 | 12 | 7 | 30 | 990 |

Based on reports of timber operators at time of registration as compiled by the California Division of Forestry.

**Appendix Table 2. Lumber Production by Mill-Size Class,
Mendocino County, 1951 and 1956**

| Size class of reporting mills, annual production, million board feet | 1951 | | 1956 | |
|--|-----------------|------------------|-----------------|------------------|
| | Number of mills | Total production | Number of mills | Total production |
| | | million bd. ft. | | million bd. ft. |
| More than 25.0 | 2 | 294.4 | 7 | 277.8 |
| 10.0-24.9 | 12 | | 25 | 352.5 |
| 1.0- 9.9 | 70 | | 51 | 231.9 |
| Less than 1.0 | 34 | 10.6 | 18 | 6.2 |
| Total reported | 118 | 578.2 | 101 | 868.4 |
| Estimated | 8 | 7.4 | 4 | 5.9 |
| Grand total | 126 | 585.6 | 105 | 874.4 |

Data obtained from Division of Forest Economics, California Forest and Range Experiment Station, U. S. Forest Service.

**Appendix Table 3. Number of Private Rural Landowners by Size
and Type of Owner, Mendocino County, 1957**

| Type of owner | Size of ownership (all land types combined) | | | | | | | | | | | | |
|---|---|--------|---------|---------|-----------|-------------|-------------|-------------|---------------|---------------|---------------|-------------|-------|
| | 0-39 | 40-179 | 180-379 | 380-699 | 700-1,299 | 1,300-2,599 | 2,600-4,999 | 5,000-9,999 | 10,000-19,999 | 20,000-29,999 | 30,000-49,999 | 50,000 plus | Total |
| | Number of ownerships | | | | | | | | | | | | |
| Timber-operating companies..... | .. | 27 | 9 | 4 | 8 | 4 | 5 | 3 | 2 | 3 | 2 | 2 | 69 |
| Timber-holding companies..... | .. | 9 | 3 | 1 | .. | 2 | 1 | .. | .. | .. | .. | .. | 16 |
| Timber-operating individuals..... | 24 | 72 | 16 | 11 | 10 | 6 | 5 | 4 | 1 | 1 | .. | .. | 150 |
| Timber-holding individuals..... | 18 | 119 | 31 | 20 | 12 | 6 | 3 | .. | 1 | .. | .. | .. | 210 |
| Range-livestock farming companies..... | .. | .. | .. | 1 | .. | 2 | .. | 1 | 3 | 1 | .. | .. | 8 |
| Range-livestock farming individuals..... | 58 | 136 | 57 | 62 | 83 | 50 | 59 | 19 | 8 | 1 | .. | .. | 533 |
| Other farmers..... | 152 | 256 | 78 | 33 | 13 | 8 | 1 | .. | .. | .. | .. | .. | 541 |
| Recreational and other classified owners..... | 1,418 | 743 | 124 | 60 | 19 | 8 | .. | .. | .. | .. | .. | .. | 2,372 |
| Unknown..... | 10 | 8 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 18 |
| Total..... | 1,680 | 1,370 | 318 | 192 | 145 | 86 | 74 | 27 | 15 | 6 | 2 | 2 | 3,917 |

Appendix Table 4. Area of Privately Owned Rural Land by Size and Type of Owner, Mendocino County, 1957

| Type of owner | Size of ownership (all land types combined) | | | | | | | | | | | | |
|---|---|--------|---------|---------|-----------|-------------|-------------|-------------|---------------|---------------|---------------|-------------|---------|
| | 0-39 | 40-179 | 180-379 | 380-699 | 700-1,299 | 1,300-2,599 | 2,600-4,999 | 5,000-9,999 | 10,000-19,999 | 20,000-29,999 | 30,000-49,999 | 50,000 plus | Total |
| | Area, in thousands of acres | | | | | | | | | | | | |
| Timber-operating companies..... | .... | 3.7 | 3.1 | 3.0 | 7.0 | 8.5 | 16.4 | 26.4 | 24.4 | 76.3 | 66.8 | 244.2 | 479.8 |
| Timber-holding companies..... | .... | 1.2 | 0.7 | 1.1 | .... | 2.2 | 3.6 | .... | .... | .... | .... | .... | 8.8 |
| Timber-operating individuals..... | 0.7 | 6.5 | 5.3 | 7.0 | 9.5 | 12.9 | 16.9 | 24.7 | 19.2 | 23.6 | .... | .... | 126.3 |
| Timber-holding individuals..... | 0.4 | 15.6 | 9.8 | 14.7 | 10.5 | 13.5 | 10.9 | .... | 12.4 | .... | .... | .... | 87.8 |
| Range-livestock farming companies.. | .... | .... | .... | 1.1 | .... | 4.0 | .... | 7.8 | 33.9 | 24.0 | .... | .... | 70.8 |
| Range-livestock farming individuals. | 0.3 | 16.0 | 19.2 | 44.4 | 81.2 | 103.1 | 209.2 | 127.8 | 100.9 | 20.7 | .... | .... | 722.8 |
| Other farmers..... | 2.7 | 30.4 | 24.3 | 20.9 | 11.1 | 15.3 | 3.7 | .... | .... | .... | .... | .... | 108.4 |
| Recreational and other classified owners..... | 16.1 | 81.1 | 39.2 | 40.3 | 17.9 | 16.4 | .... | .... | .... | .... | .... | .... | 211.0 |
| Unknown..... | 0.2 | 1.3 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1.5 |
| Total..... | 20.4 | 155.8 | 101.6 | 132.5 | 137.2 | 175.9 | 260.7 | 186.7 | 190.8 | 144.6 | 66.8 | 244.2 | 1,817.2 |

**Appendix Table 5. Number and Area of Ownerships by Residency,
Mendocino County, 1957**

| Residency status | Owners | | Area owned | | Average size ownership |
|--------------------------------|--------------|--------------|-------------------|--------------|---------------------------|
| | Numbers | Per cent | Thousand acres | Per cent | Acres |
| RESIDENT*..... | 2,515 | 64.1 | 1,174 | 64.6 | 467 |
| NONRESIDENT†..... | 1,384 | 35.4 | 641 | 35.3 | 463 |
| UNKNOWN..... | 18 | 0.5 | 2 | 0.1 | ... |
| TOTAL..... | 3,917 | 100.0 | 1,817 | 100.0 | 465 |
| NONRESIDENTS | | | | | |
| Northern California coast..... | 315 | 8.0 | 149 | 8.2 | 473 |
| San Francisco Bay area..... | 785 | 20.2 | 318 | 17.5 | 406 |
| Other Northern California..... | 76 | 1.9 | 45 | 2.5 | 593 |
| Southern California..... | 169 | 4.3 | 78 | 4.3 | 461 |
| Outside California..... | 39 | 1.0 | 51 | 2.8 | 1,310 |
| Total..... | 1,384 | 35.4 | 641 | 35.3 | 463 |

* A party whose address listed with the County Tax Collector is within the county. The land is not necessarily occupied.

† A party whose address listed with the County Tax Collector is outside the county.

**Appendix Table 6. Number of Owners by Residence and Type,
Mendocino County, 1957**

| Type of owner | Resident | | Nonresident | |
|---|--------------|-------------|--------------|-------------|
| | Number | Per cent | Number | Per cent |
| Timber-operating companies | 42 | 1.1 | 27 | 0.7 |
| Timber-holding companies . . . . . | .... | .... | 16 | 0.4 |
| Timber-operating individuals | 125 | 3.2 | 25 | 0.6 |
| Timber-holding individuals | 79 | 2.0 | 131 | 3.4 |
| Range-livestock-farming companies | 2 | 0.1 | 6 | 0.2 |
| Range-livestock-farming individuals | 423 | 10.8 | 110 | 2.8 |
| Other farmers | 400 | 10.3 | 141 | 3.6 |
| Recreational-property owners | 211 | 5.4 | 557 | 14.3 |
| Other classified owners | 1,233 | 31.6 | 371 | 9.5 |
| TOTAL * | 2,515 | 64.5 | 1,384 | 35.5 |

* Excludes 18 owners for whom there are no addresses. Because of this the total is 3,899 owners and not 3,917 as indicated on other tables in this report.

Appendix Table 7. Comparison of Ownerships and Area of All Private Rural Land by Size of Ownership, Mendocino County, 1948 and 1957

| Size of ownership | 1948* | | | | 1957 | | | | Change within size classes | | Change of average size holding with- in size class |
|----------------------------|------------|----------|-----------------|----------|------------|----------|-----------------|----------|----------------------------|----------|--|
| | Ownerships | | Total land area | | Ownerships | | Total land area | | Ownerships | Area | |
| | Numbers | Per cent | 1,000 acres | Per cent | Numbers | Per cent | 1,000 acres | Per cent | | | |
| | | | | | | | | | | | |
| Acres | | | | | | | | | | Per cent | Per cent |
| 1- 179..... | 2,338 | 72.3 | 205 | 12.0 | 3,050 | 77.7 | 176 | 9.7 | + 30.6 | - 14.1 | - 34.1 |
| 180- 379..... | 379 | 11.7 | 123 | 7.2 | 318 | 8.1 | 102 | 5.6 | - 16.1 | - 17.1 | - 1.2 |
| 380- 699..... | 191 | 5.9 | 130 | 7.6 | 193 | 4.9 | 132 | 7.3 | + 0.5 | + 1.5 | + 0.7 |
| 700- 1,299..... | 117 | 3.6 | 111 | 6.5 | 144 | 3.7 | 137 | 7.5 | + 23.9 | + 23.4 | - 0.5 |
| 1,300- 2,599..... | 107 | 3.3 | 211 | 12.4 | 86 | 2.2 | 176 | 9.7 | - 19.6 | - 16.6 | + 4.1 |
| 2,600- 4,999..... | 54 | 1.7 | 197 | 11.5 | 74 | 1.9 | 261 | 14.4 | + 39.0 | + 32.5 | - 2.2 |
| 5,000- 9,999..... | 23 | 0.7 | 146 | 8.5 | 27 | 0.7 | 187 | 10.3 | + 14.8 | + 28.1 | + 9.1 |
| 10,000-19,999..... | 16 | 0.5 | 204 | 11.9 | 15 | 0.4 | 191 | 10.5 | - 6.3 | - 6.4 | ± 0.0 |
| 20,000-29,999..... | 2 | 0.1 | 52 | 3.1 | 6 | 0.2 | 144 | 7.9 | + 200.0 | + 177.0 | - 7.7 |
| 30,000-49,999..... | 4 | 0.1 | 134 | 7.8 | 2 | 0.1 | 67 | 3.7 | - 50.0 | - 50.0 | ± 0.0 |
| More than 50,000..... | 2 | 0.1 | 197 | 11.5 | 2 | 0.1 | 244 | 13.4 | ± 0.0 | + 23.9 | + 23.9 |
| All classified ownerships. | 3,233 | 100.0 | 1,710 | 100.0 | 3,917 | 100.0 | 1,817 | 100.0 | + 21.1 | + 6.2 | - 6.3 |
| Unknown..... | ..... | ..... | 75 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Total acreage..... | ..... | ..... | 1,785 | ..... | ..... | ..... | 1,817 | ..... | ..... | + 1.8 | ..... |

* Data from Table 4, Baker and Poli (1951).

**Appendix Table 8. Comparison of Number of Ownerships and Area
of All Private Rural Land by Type of Ownership,
Mendocino County, 1948 and 1957**

| Type of ownership | 1948* | | | | 1957 | | | | Change within owner type | | Change of average size holding within owner type | |
|--|------------|----------|-----------------|----------|------------|----------|-----------------|----------|--------------------------|--------|--|----------|
| | Ownerships | | Total land area | | Ownerships | | Total land area | | Ownerships | Area | Acres | Per cent |
| | Numbers | Per cent | 1,000 acres | Per cent | Numbers | Per cent | 1,000 acres | Per cent | | | | |
| | | | | | | | | | | | | |
| Timber-operating companies..... | 29 | 0.9 | 331 | 18.5 | 69 | 1.8 | 480 | 26.5 | +137.9 | + 45.0 | -4,470 | -39.0 |
| Timber-holding companies. | 26 | 0.8 | 76 | 4.3 | 16 | 0.4 | 9 | 0.5 | - 38.5 | - 88.2 | -2,360 | -80.8 |
| Timber-operating individuals..... | 78 | 2.4 | 42 | 2.3 | 150 | 3.8 | 126 | 6.9 | + 92.4 | +200.0 | + 300 | +55.5 |
| Timber-holding individuals | 220 | 6.8 | 87 | 4.9 | 210 | 5.4 | 88 | 4.8 | - 4.5 | - 1.1 | + 20 | + 5.0 |
| Range-livestock farming companies..... | 7 | 0.2 | 77 | 4.4 | 8 | 0.2 | 71 | 3.9 | + 14.3 | - 7.8 | -2,120 | -19.3 |
| Range-livestock farming individuals..... | 541 | 16.7 | 767 | 42.9 | 533 | 13.6 | 723 | 39.8 | - 1.5 | - 5.7 | - 40 | - 2.8 |
| Other farmers..... | 669 | 20.7 | 127 | 7.1 | 541 | 13.8 | 108 | 5.9 | - 19.2 | - 14.9 | + 10 | + 5.3 |
| Recreation-property owners | 637 | 19.7 | 113 | 6.3 | 768 | 19.6 | 110 | 6.0 | + 20.6 | - 2.7 | - 37 | -20.5 |
| Other classified owners... | 1,026 | 31.8 | 94 | 5.3 | 1,604 | 40.9 | 101 | 5.6 | + 56.3 | + 7.4 | - 27 | -30.0 |
| Unclassified..... | ..... | ..... | 71 | 4.0 | 18 | 0.5 | 1 | 0.1 | ..... | ..... | ..... | ..... |
| Total all types..... | 3,233 | 100.0 | 1,785 | 100.0 | 3,917 | 100.0 | 1,817 | 100.0 | + 21.1 | + 1.8 | - 85 | - 6.3 |

* Data from Table 3, Baker and Poli (1951).

**Appendix Table 9. Proportion of Private Rural Owners and Area
Owned by Ownership Size and by Change Status,
Mendocino County, 1948 and 1957**

| Size of ownership (all land types combined) | Same owners Same acreage | | Same owners Smaller acreage | | Same owners Larger acreage | | New owners to the property | | Total | |
|--|-----------------------------|-------|--------------------------------|-------|-------------------------------|-------|-------------------------------|------|-------|-------|
| | Owners | Area | Owners | Area | Owners | Area | Owners | Area | | |
| | | | | | | | | | | |
| Per cent | | | | | | | | | | |
| Acres | | | | | | | | | | |
| 1- 39 | 4.9 | 0.2 | 3.1 | 0.1 | 0.4 | * | 34.5 | 0.8 | 42.9 | 1.1 |
| 40- 179 | 10.7 | 2.8 | 2.6 | 0.6 | 0.7 | 0.2 | 20.8 | 4.9 | 34.8 | 8.5 |
| 180- 379 | 1.7 | 1.2 | 0.8 | 0.5 | 1.1 | 0.8 | 4.5 | 3.0 | 8.1 | 5.5 |
| 380- 699 | 1.0 | 1.5 | 0.6 | 0.8 | 0.9 | 1.5 | 2.4 | 3.4 | 4.9 | 7.2 |
| 700- 1,299 | 0.6 | 1.3 | 0.4 | 0.9 | 0.7 | 1.4 | 2.0 | 3.9 | 3.7 | 7.5 |
| 1,300- 2,599 | 0.3 | 1.1 | 0.2 | 0.7 | 0.7 | 3.1 | 1.0 | 4.9 | 2.2 | 9.8 |
| 2,600- 4,999 | 0.1 | 0.3 | 0.2 | 1.6 | 0.8 | 5.9 | 0.8 | 6.6 | 1.9 | 14.4 |
| 5,000- 9,999 | 0.1 | 1.1 | 0.1 | 0.7 | 0.3 | 4.1 | 0.2 | 4.3 | 0.7 | 10.2 |
| 10,000-19,999 | * | 1.1 | 0.1 | 2.0 | 0.2 | 3.8 | 0.1 | 3.7 | 0.4 | 10.6 |
| 20,000-29,999 ..... | ..... | ..... | ..... | ..... | 0.1 | 3.0 | 0.1 | 5.0 | 0.2 | 8.0 |
| 30,000-49,999 ..... | ..... | ..... | ..... | ..... | ..... | ..... | 0.1 | 3.7 | 0.1 | 3.7 |
| More than 50,000 ..... | ..... | ..... | ..... | ..... | * | 9.7 | * | 3.8 | 0.1 | 13.5 |
| Total | 19.4 | 10.6 | 8.1 | 7.9 | 5.9 | 33.5 | 66.6 | 48.0 | 100.0 | 100.0 |

* Less than 0.05 per cent

**Appendix Table 10. Proportion of Private Rural Owners and Area
Owned by Owner Type and by Change Status,
Mendocino County, 1948 and 1957**

| Type of ownership (all land types combined) | Same owners Same acreage | | Same owners Smaller acreage | | Same owners Larger acreage | | New owners to the property | | Total | |
|--|-----------------------------|------|--------------------------------|------|-------------------------------|------|-------------------------------|------|--------|-------|
| | Owners | Area | Owners | Area | Owners | Area | Owners | Area | Owners | Area |
| | | | | | | | | | | |
| Per cent | | | | | | | | | | |
| Timber-operating companies | 0.1 | 0.1 | .... | .... | 0.2 | 12.6 | 1.5 | 13.8 | 1.8 | 26.5 |
| Timber-holding companies | 0.2 | 0.1 | .... | .... | .... | .... | 0.2 | 0.4 | 0.4 | 0.5 |
| Timber-operating individuals | 0.3 | 1.3 | 0.2 | * | 0.3 | 1.1 | 3.0 | 4.5 | 3.8 | 6.9 |
| Timber-holding individuals | 0.8 | 0.5 | 0.4 | 0.1 | 0.2 | 0.7 | 4.0 | 3.5 | 5.4 | 4.8 |
| Range-livestock farming companies | .... | .... | * | 0.1 | 0.1 | 2.6 | 0.1 | 1.2 | 0.2 | 3.9 |
| Range-livestock farming individuals | 2.1 | 4.1 | 2.7 | 6.5 | 2.5 | 14.0 | 6.3 | 15.2 | 13.6 | 39.8 |
| Other farmers | 4.6 | 1.7 | 2.7 | 0.8 | 1.0 | 1.0 | 5.5 | 2.4 | 13.8 | 5.9 |
| Recreational-property owners | 4.5 | 1.7 | 0.6 | 0.2 | 0.6 | 1.0 | 13.9 | 3.1 | 19.6 | 6.0 |
| Other classified owners | 6.8 | 1.1 | 1.5 | 0.2 | 1.0 | 0.5 | 31.6 | 3.8 | 40.9 | 5.6 |
| Unknown owners | .... | .... | .... | .... | .... | .... | 0.5 | 0.1 | 0.5 | 0.1 |
| Total | 19.4 | 10.6 | 8.1 | 7.9 | 5.9 | 33.5 | 66.6 | 48.0 | 100.0 | 100.0 |

* Less than 0.05 per cent.

Appendix Table 11. Comparison of Estimated Total Number and Area of Small Woodland Ownerships in Mendocino County, 1957, With Marketing Sample

| Size of ownership acres | Estimated population | | | | Marketing sample | | | |
|--------------------------------|----------------------|----------|-------------|----------|------------------|----------|-------------|----------|
| | Owners | | Acreage | | Owners | | Acreage | |
| | Numbers | Per cent | 1,000 acres | Per cent | Numbers | Per cent | 1,000 acres | Per cent |
| 0- 39 . . . | 1,157 | 41.2 | 11.1 | 1.4 | 30 | 23.7 | 0.7 | 1.4 |
| 40- 179 . . . | 984 | 35.1 | 95.4 | 12.9 | 54 | 42.9 | 5.1 | 10.2 |
| 180- 379 . . . | 266 | 9.5 | 70.4 | 9.5 | 18 | 14.3 | 5.3 | 10.6 |
| 380- 699 . . . | 143 | 5.1 | 81.1 | 11.0 | 8 | 6.3 | 4.4 | 8.8 |
| 700-1,299 . . . | 118 | 4.2 | 113.3 | 15.3 | 7 | 5.6 | 7.8 | 15.6 |
| 1,300-2,599 . . . | 73 | 2.6 | 139.5 | 19.0 | 4 | 3.2 | 9.2 | 18.5 |
| 2,600-4,999 . . . | 65 | 2.3 | 227.6 | 30.9 | 5 | 4.0 | 17.4 | 34.9 |
| Total | 2,806 | 100.0 | 738.4 | 100.0 | 126 | 100.0 | 49.9 | 100.0 |

Sampling procedure used for marketing-interview study. The ownership study presented on page 17 made it possible to designate each owner touched by the line intercept as being a commercial or noncommercial forest land owner. From this sample it was estimated that there were 2,806 private commercial forest land owners with less than 5,000 acres. Financial and time considerations indicated that about 150 land owners could be personally contacted. A random sample of 158 owners was drawn from an owner-address list. These owners were distributed among the size classes in the proportion that the size class represented the estimated total number of owners, as shown in the table above. For example, 35 per cent of the total number of owners were in the 40-179-acre size class; thus, 35 per cent of the 158 owners to be interviewed were drawn from that class. Not all of these owners could be contacted, as some could not be found while others failed to reply to a mail questionnaire. Thus the final sample consisted of 126 sample owners, broken down in size groups as shown in the table.

Appendix Table 12. Distribution of Small Woodland Sales by Total Value of Sale, Mendocino County, 1950-1956

| Total value of sales* | Sales | | Sales in which technical assistance was received |
|--------------------------|--------|----------|--|
| Dollars | Number | Per cent | Number |
| Less than 999 | 8 | 19 | .. |
| 1,000- 1,999 | 5 | 12 | .. |
| 2,000- 2,999 | 5 | 12 | 1 |
| 3,000- 4,999 | 6 | 15 | 1 |
| 5,000- 9,999 | 4 | 10 | 1 |
| 10,000-14,999 | 4 | 10 | .. |
| 15,000-19,999 | 4 | 10 | 2 |
| 20,000 or more | 5 | 12 | 2 |
| Totals | 41 | 100 | 7 |

* Range in total sale values: \$49.50-\$60,000. Average value per sale: \$9,308.

**Appendix Table 13. Reported Prices Per Thousand Board Feet
Paid for Redwood and Douglas-Fir Stumpage in
Mendocino County, 1950-1956***

| Year | Redwood | | Douglas-fir | |
|-----------|---------|--------------|-------------|--------------|
| | Average | Range | Average | Range |
| 1950..... | \$ 3.25 | \$2.50- 4.00 | \$ 3.00 | \$2.50- 4.00 |
| 1951..... | 6.31 | 3.00-13.00 | 4.00 | 2.50- 6.00 |
| 1952..... | 7.51 | 2.50-20.00 | 5.50 | 1.41-20.00 |
| 1953..... | 7.00 | 4.00-10.00 | 5.75 | 3.00-10.00 |
| 1954..... | no data | ..... | 5.50 | 4.00- 7.00 |
| 1955..... | 10.04 | 4.00-20.00 | 7.25 | 2.50-13.00 |
| 1956..... | 10.50 | 5.00-15.00 | 10.25 | 5.00-18.00 |

* Based on prices in 125 recorded private timber sale contracts.

**Appendix Table 14. Number of Owners Cutting Timber for Home
Use and Product Quantities, by Type of Product,
Mendocino County, 1950-1956**

| Product | Owners* | | Annual number of product units† | Average number of product units per owner† |
|---------------------|---------|----------|---------------------------------------|--|
| | Number | Per cent | | |
| Fuel wood..... | 47 | 39 | 424 cords | 9 cords |
| Fence posts..... | 15 | 12 | ‡ | ‡ |
| Lumber..... | 4 | 3 | § | § |
| Poles..... | 2 | 1 | § | § |
| Split products..... | 3 | 1 | § | § |

* Based on 120 replies.

† Owner estimates in 44 replies; prorated for others.

‡ One owner reported cutting 250 posts annually. All other owners cut posts at irregular intervals in quantities ranging from 50 to 2,000 posts.

§ No owners reported regular cutting of these products.

LITERATURE CITED

ANONYMOUS

1957. Production of western sawmills for 1956. *The Lumberman* 84(4):57-63.

BAKER, HAROLD L., and ADON POLI

1951. Area and ownership of forest land in Mendocino County, California. California Forest and Range Experiment Station, Berkeley, Calif. Forest Survey Release 10:1-23.

CALIFORNIA DIVISION OF FORESTRY

1953. Forest practice rules for Redwood Forest District. Revised 1953. California State Printing Office, Sacramento, 37 pp.
1955. Forest practice rules for Coast Range Pine and Fir Forest District. Revised 1953. California State Printing Office, Sacramento, 33 pp.

CALIFORNIA FOREST AND RANGE EXPERIMENT STATION

1954. Forest statistics for California. California Forest and Range Experiment Station, Berkeley. Forest Survey Release 25:1-66.

CASAMAJOR, PAUL

1958. Changes in the ownership of rural private land in Mendocino County, California, 1947-1957. Unpublished Master of Forestry professional paper, School of Forestry, University of California. 64 pp.

DUERR, WILLIAM A.

1949. The economic problems of forestry in the Appalachian Region. Harvard University Press, Cambridge, Mass. 317 pp.

HASEL, A. A., and ADON POLI

1949. A new approach to forest ownership surveys. *Land Economics* 25:1-10.

INDUSTRIAL SURVEY ASSOCIATES

1951. Mendocino County—Its economic assets, needs and prospects. A report prepared for the Mendocino County Chamber of Commerce by Industrial Survey Associates, San Francisco. 82 pp.

MAY, RICHARD H.

1953. A century of lumber production in California and Nevada. California Forest and Range Experiment Station, Berkeley. Forest Survey Release 20:1-33.
1954. The lumber production and forest resources of Mendocino County, California. Manuscript, Division of Forest Economics, California Forest and Range Experiment Station, Berkeley. 20 pp.
1957. Production and plant receipts of veneer logs in California—1956. California Forest and Range Experiment Station, Berkeley. Forest Survey Release 27:1-7.

MAY, RICHARD H., and HAROLD L. BAKER

1957. Lumber production in California—1956. California Forest and Range Experiment Station, Berkeley. Forest Survey Release 30:1-15.
1958. Output of timber products in California, 1956. California Forest and Range Experiment Station, Berkeley. Forest Survey Release 35:1-35.

MAY, RICHARD H., and ALEXANDER SIMONTACCHI

1947. Production of lumber and other sawed products in California and Nevada, 1946. California Forest and Range Experiment Station, Berkeley. Forest Research Note 55:1-9.

POLI, ADON, and DONALD T. GRIFFITH

1948. Forest land ownership in northern Mendocino County, California. California Forest and Range Experiment Station, Berkeley. Forest Service Release 5:1-49.

Cover photograph:

Intermingled range, forest, and farm use of land typical of small ownership in Mendocino County. (Photograph courtesy of Adon Poli, Agricultural Research Service.)